

UNCLASSIFIED

AD NUMBER

AD478190

LIMITATION CHANGES

TO:

Approved for public release; distribution is unlimited.

FROM:

Distribution authorized to U.S. Gov't. agencies only; Test and Evaluation; JUL 1962. Other requests shall be referred to Defense Advanced Research Projects Agency, TIO, 1400 Wilson Blvd, Arlington, VA 22209.

AUTHORITY

dtic form 55

THIS PAGE IS UNCLASSIFIED

①

SUPPLEMENT

TO

MODIFICATION AND CALIBRATION  
OF DEFOLIATION EQUIPMENT

(C-123 — FIRST MODIFICATION)

JULY 1962

AD 43. 428190  
FILE COPY

DDC  
MAR 2 1966  
TISA E

036 850

6 MODIFICATION AND CALIBRATION OF DEFOLIATION EQUIPMENT  
(C-123 - First Modification).

SUPPLEMENT,

A joint report by personnel of USDA, USAF  
and USA CmlC of work performed under OSD/  
ARPA Order 256-62, ~~Amendment 4~~.

15

ARPA Order 256-4

10

James W. Brown, USA CmlC

This document, or any portion thereof, may not be reproduced without specific authorization from the Advanced Research Projects Agency, Office of the Secretary of Defense; however, DDC is authorized to reproduce the document for U.S. government purposes.

Each transmittal of this document outside the agencies of the U.S. government must have prior approval of the Director of Technical Information, Advanced Research Projects Agency, Office of the Secretary of Defense.

11

Jul 1962,

12

71 p.

Eglin Air Force Base Florida

036 850

## INTRODUCTION:

This supplement replaces the previous "Supplement to Modification and Calibration of Defoliation Equipment (C-123 - First Modification)." It contains basic data and plots for 18 additional spray flights as well as the 59 plots of data obtained through 11 July 1962.

## NOTES:

The last two spray flights were performed on 17 July 1962 and it was planned to conduct multi-passes inwind over the sample line at stations 80, 60, 40, and 20. Smoke grenades were set off singly at the desired station crossing. Prevailing ground conditions were such that obscuring of certain of the stations occurred. As a result two passes were made over station 80, none over station 60, and one each over stations 40 and 20. The plotted deposit shows the effect of a double application across the station 80 and two adjacent swaths across stations 40 and 20, a 400 foot spacing of parallel spray releases.

For crosswind application, multi-passes were planned and accomplished across stations 25, 50, 75 and 100. The plotted deposit is representative of an area coverage mission under the meteorological conditions prevailing.

The spray material was a mix of 2 parts fuel oil and 1 part purple using the equipment as tested on 2 July.

C-123 aircraft #56-4362 was released from these tests on 17 July 1962. Captain Charles F. Hagerty, AO3039577, 4500th OPS Sq, Langley AFB, Va., flew the missions during the period 14-17 July. His cooperative effort was much appreciated.



## **ADDITIONAL CONCLUSIONS AND RECOMMENDATIONS**

Additional conclusions and recommendations for the basic report include:

From a cursory review of data collected since 11 July, it appears that operational inwind flight centers should be spaced at about 300 feet, and a spacing of about 400 feet is recommended for crosswind flights. The flow rate should be of the order of 200 gallons per minute for the first C-123 modification (aircraft #56-4362).

f. (Recommendation) Include an appropriate flow rate meter in the system.

g. (Recommendation) If feasible, arrange additional piping and valves to allow the MC-1 pump unit to be used to load the tank. If incorporated, this provision would by-pass the need for portable pumping gear other than a suitable length of hose and shorten the time required for filling.

## WIND VECTORS AS SHOWN ON GRAPHS

1. Wind directions considered to have an important influence on gross spray patterns are those at the altitude of aircraft flight and the level 50 feet below this altitude. On this basis, a mean direction was determined from these two wind directions, and this figure (1) used to correct station interval for percent recovery determinations and (2) plotted on the grid diagram with an arrow and notation in degrees. An example of this is as follows:

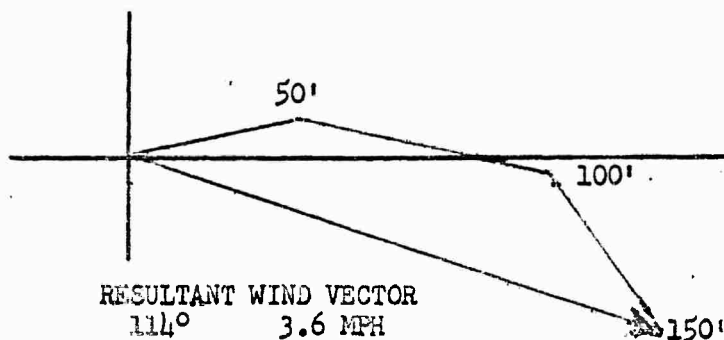
Alt.	Wind		Temp. (C°)	Dew Pt.
	Dir.	MPH		
GR.	050	0.4	23.3	22.6
50'	070	3.1		
100'	110	4.6		
150'	150	4.5		
200'	150	4.2		

$\bar{X} = 130^\circ$

WIND  
130°

This method of wind correction was employed through 6 July on all graphs and computations when met. data was available.

2. Beginning 10 July a more realistic picture of the wind pattern was determined using more of the wind data provided. Wind directions and velocities at 50 foot intervals up to the altitude of aircraft flight are noted as vectors with a length representing the velocity in miles per hour. The scale used for miles per hour is  $5/16" = 1 \text{ MPH}$ , an arbitrary value. (The method of plotting these vectors is analogous to that used in predicting fallout from a nuclear blast). A resultant vector is drawn from the origin to the tip of the final vector and an average velocity determined by dividing the length of this resultant vector by the number of vectors included. An example follows which utilizes the same wind data from the above chart:



This resultant wind vector, a more accurate and complete representation of all wind directions and velocities, is used to correct station intervals from 10 July on.

# CONSOLIDATED SUMMARY

## Swath Width (Ft)

Flt	Alt	Date	Type	Total	0.5 GPA	1.0 GPA	1.5 GPA	GPM	MMD	Material	% Recovery
12 Jul 62											
1	150	13 Jul 62	Inwind	1060	300	260	20	196		Fuel Oil	51.9
2	150	"	Inwind	1040	400	260	0	196		Fuel Oil	53.0
3	200	"	Inwind	1000	800	220	0	196		Fuel Oil	112.5
4	150	"	Inwind	860	760	0	0	196		Fuel Oil	74.3
5	150	"	Crosswind	2000	500	100	0	196	213	Fuel Oil	-
6	150	"	Crosswind	1940	780	120	0	196	213	Fuel Oil	-
1	150	14 Jul 62	Inwind	1400	420	300	0	197		2 Fuel Oil	58.5
2	150	"	Inwind	780	520	300	0	197		& 1 Purple	59.4
3	150	"	Crosswind	2000	580	180	0	197	233	"	-
4	150	"	Inwind	1020	380	80	0	197		"	68.4
1	150	15 Jul 62	Inwind	600	420	300	280	197		2 Fuel Oil	65.8
2	150	"	Inwind	1080	460	260	20	197		& 1 Purple	60.3
3	150	"	Inwind	780	540	80	0	197		"	76.3
4	150	"	Crosswind	1540	880	40	0	197	233	"	-
1	150	16 Jul 62	Crosswind	920	720	340	0	197	233	2 Fuel Oil	-
2	150	"	Inwind	1080	700	260	0	197		& 1 Purple	97.8
1	150	17 Jul 62	Inwind	(4 Swaths)							
2	150	"	Crosswind	(4 Swaths)							

# CONSOLIDATED SUMMARY

## CORRECTED SWATH WIDTHS; % OF MASS IN EACH SWATH

Flt	Date	Type	Total	0.5		1.0		1.5	
				GPA (FT)	(% MASS)	GPA (FT)	(% MASS)	GPA (FT)	(% MASS)
1	24 Jun 62	Crosswind	940	800	99.7	400	72.8	300	60.7
2	"	Crosswind	1200	460	71.7	360	60.4	200	36.9
3	"	Crosswind	1740	840	77.7	320	44.8	240	35.5
4	"	Crosswind	1960	460	69.6	140	34.5	140	34.5
25 Jun 62 Aircraft Maintenance									
1	26 Jun 62	Crosswind	1340	320	52.7	0	-	0	-
2	"	Inwind	852	381	64.7	0	-	0	-
3	"	Inwind	925	435	71.9	73	20.1	36	15.2
4	"	Inwind	840	320	83.2	300	76.7	60	32.6
5	"	Crosswind	1780	620	87.7	200	32.7	0	-
6	"	Inwind	1259	395	82.6	263	52.5	56	23.5
1	27 Jun 62	Inwind	1040	600	86.4	300	64.1	260	57.9
2	"	Inwind	1060	285	86.01	212	77.3	212	77.3
3	"	Inwind	413	263	98.8	244	96.5	244	96.5
4	"	Inwind	526	338	91.4	319	87.4	263	80.7
5	"	Inwind	1428	470	93.8	301	80.9	263	78.3
6	"	Crosswind	2000	500	89.1	320	72.4	280	67.2
28-30 Jun 62 Pilot Tests, Weather Abort, Equipment Malfunction									
1	1 Jul 62	Inwind	540	470	100.0	370	89.6	270	75.8
2	"	Inwind	1500	400	90.9	300	81.8	270	79.5
3	"	Crosswind	1660	560	83.2	400	72.7	370	68.3
4	"	Inwind	1560	420	84.7	400	81.2	360	79.0
1	2 Jul 52	Inwind	1400	700	87.8	360	58.2	140	25.9
2	"	Inwind	870	344	90.8	236	77.7	236	77.7
3	"	Inwind	1221	620	86.7	376	70.5	319	63.8
4	"	Crosswind	ABORT						
5	"	Inwind	1020	660	92.7	460	73.1	320	67.3
1	3 Jul 62	Inwind	925	399	91.6	272	79.7	254	77.2
2	"	Inwind	867	361	93.4	229	78.3	193	70.1
3	"	Inwind	749	339	93.8	240	86.1	212	80.0
4	"	Inwind	827	244	89.5	244	88.5	225	88.5
5	"	Crosswind	1760	900	67.5	240	54.4	220	49.1
1	4 Jul 62	Crosswind	883	401	84.1	229	67.8	218	66.2
2	"	Inwind	480	260	93.7	240	93.9	200	84.9
3	"	Inwind	580	320	95.0	240	88.7	220	85.2
4	"	Inwind	1120	300	96.8	240	90.2	220	79.7
5	"	Inwind	1380	320	96.6	280	88.7	220	80.6
6	"	Crosswind	1920	900	87.8	580	70.0	280	42.4

# CONSOLIDATED SUMMARY

CORRECTED SWATH WIDTHS: % OF MASS IN EACH SWATH

Flt	Date	Type	Total (ft)	0.5 GPA (FT) (% MASS)	1.0 GPA (FT) (% MASS)	1.5 GPA (FT) (% MASS)
1	5 Jul 62	Inwind	1040	380 92.0	260 78.2	260 78.2
2	"	Inwind	610	350 92.5	210 73.5	160 61.5
3	"	Inwind	791	497 89.8	313 73.0	258 63.2
4	"	Inwind	940	381 89.7	344 85.0	290 76.7
5	"	Inwind	940	340 89.5	280 83.3	240 75.0
6	"	Crosswind	1340	400 93.1	380 82.7	340 74.4
1	6 Jul 62	Inwind	582	245 83.8	184 73.4	184 69.5
2	"	Inwind	1060	420 84.0	280 69.9	260 66.2
3	"	Inwind	740	320 94.4	240 94.0	240 84.0
4	"	Inwind	1300	440 91.3	220 69.1	220 69.1
5	"	Inwind	1200	420 87.9	220 65.7	220 65.7
6	"	Crosswind	1500	460 87.2	260 68.7	240 64.5
7	"	Crosswind	1540	500 90.7	300 72.8	240 62.4
8	"	Crosswind	1920	360 81.4	280 74.1	240 67.4

## 7, 8, 9 July 1962 Aircraft Maintenance

1	10 Jul 62	Inwind	820	420 91.5	240 59.2	0 -
2	"	Inwind	1301	268 87.4	249 82.8	0 -
3	"	Inwind	862	219 80.6	180 70.5	13 10.6
4	"	Inwind	1115	269 92.5	212 79.2	38 22.4
5	"	Crosswind	2000	520 74.0	60 11.2	0 -

1	11 Jul 62	Crosswind	1820	880 78.4	300 36.4	0 -
2	"	Inwind	667	500 92.1	278 61.8	0 -
3	"	Inwind	2000	760 89.1	100 18.7	0 -
4	"	Inwind	1040	740 85.8	120 21.2	0 -
5	"	Crosswind	1940	560 83.4	20 3.8	0 -
6	"	Abort Due to Wind Shift				

## 12 July 1962

1	13 Jul 62	Inwind	1060	300 96.5	260 88.1	20 10.7
2	"	Inwind	655	252 64.2	164 52.1	0 -
3	"	Inwind	1000	800 95.3	220 34.6	0 -
4	"	Inwind	658	581 98.9	0 -	0 -
5	"	Crosswind	2000	500 66.0	100 18.6	0 -
6	"	Crosswind	1940	780 83.6	120 18.8	0 -

1	14 Jul 62	Inwind	1224	367 82.5	262 63.4	0 -
2	"	Inwind	639	426 93.1	246 65.3	0 -
3	"	Crosswind	2000	580 62.0	180 23.0	0 -
4	14 Jul 62	Inwind	1020	380 69.3	80 17.3	0 -

1	15 Jul 62	Inwind	519	363 92.6	259 76.4	242 71.6
2	"	Inwind	923	393 90.8	222 59.8	17 7.0
3	"	Inwind	780	540 87.5	80 17.3	0 -
4	"	Crosswind	1540	880 82.5	40 5.0	0 -

# CONSOLIDATED SUMMARY

## CORRECTED SWATH WIDTHS; % OF MASS IN EACH SWATH

Flt	Date	Type	Total (ft)	0.5		1.0		1.5	
				GPA (ft)	(% MASS)	GPA (ft)	(% MASS)	GPA (ft)	(% MASS)
1	16 Jul 62	Crosswind	920	720	89.0	340	46.7	0	-
2	"	Inwind	1080	700	68.3	260	44.0	0	-
1	17 Jul 62	Inwind	(4 Swaths)						
2	"	Crosswind	(4 Swaths)						

SPRAY NOZZLE SPACING AND DATA

Test No.: 446 Date Calibrated: 12 July 1962 Date Test Flown: 13 July  
Material Used: Fuel oil Calibrated Flow Rate: 194 GPM

Nozzle Information			Location
Ident	Qty	Description	
o	56	3/8" 8135 S.S. Check valve body, only	1 thru 7, 13 thru 21, 39 thru 40
+	16	1/4" 8135 " " "	1 thru 4, 37 thru 40
Total	72		

Nozzle location, same on each boom. No. 1 is most inboard position.

1	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31	33	35	37	39	41	43	45	47	49	51	53
2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54

~~2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54~~

Engine throttle position: 3/4 open  
System pressure at engine; spraying: 22 psi  
Length of test run: 30 seconds Gallons pumped: 920

Remarks:

# MASS DEPOSIT

MATERIAL: Fuel Oil      AIRSPEED: Constant at 150 mph (130 knots)  
 DATE: 13 July 1962      ALTITUDE: 150 feet  
 FLIGHT #: 1 ; Inwind      SWATH WIDTH: 1060 feet  
 SAMPLE LINE: B      AIRCRAFT COURSE: 315 degrees  
 TIME OF RELEASE: 0442 hours  
 DURATION: 17 seconds  
 FLOW RATE: 196 GPM

STATION	G.P.A.	STATION	G.P.A.	STATION	G.P.A.	STATION	G.P.A.
Stations 1-45	blank	46	-	Stations 72-100	Trace		
		47	Trace				
		48	0.02				
		49	0.15				
		50	0.3				
		51	0.5				
		52	0.9				
		53	1.2				
		54	1.3				
		55	1.3				
		56	1.2				
		57	0.8				
		58	0.7				
		59	0.8				
		60	0.7				
		61	0.8				
		62	0.9				
		63	0.9				
		64	1.4				
		65	1.8				
		66	1.0				
		67	0.04				
		68	0.04				
		69	0.02				
		70	0.02				
		71	Trace				

$$\begin{aligned}
 \% \text{ Recovery} &= \frac{.202 \times 150 \times 16.79 \times 20}{196} = 51.9 \\
 \text{Total } &\underline{16.79}
 \end{aligned}$$



# MASS DEPOSIT

MATERIAL: Fuel Oil      AIRSPEED: Constant at 150 mph (130 knots)  
 DATE: 13 July 1962      ALTITUDE: 150 feet  
 FLIGHT #: 2; Inwind      SWATH WIDTH: 1040 feet  
 SAMPLE LINE: B      AIRCRAFT COURSE: 315 degrees  
 TIME OF RELEASE: 0458 hours  
 DURATION: 14.25 seconds  
 FLOW RATE: 196 GPM

STATION	G.P.A.	STATION	G.P.A.	STATION	G.P.A.	STATION	G.P.A.
1	Trace	26	0.5	51	1.2		
2	"	27	0.4	52	1.3		
3	"	28	0.3	53	0.08		
4	" "	29	0.4	54	Trace		
5	"	30	0.4	55	-		
6	"	31	0.4				
7	"	32	0.5				
8	"	33	0.7				
9	0.04	34	0.7				
10	0.04	35	0.8				
11	0.08	36	0.8				
12	0.1	37	0.9				
13	0.2	38	0.9				
14	0.3	39	1.0				
15	0.3	40	1.0				
16	0.4	41	1.1				
17	0.4	42	1.0				
18	0.4	43	1.0				
19	0.4	44	1.0				
20	0.4	45	0.8				
21	0.4	46	0.9				
22	0.4	47	0.9				
23	0.5	48	0.9				
24	0.5	49	1.0				
25	0.4	50	1.1				

$$\% \text{ Recovery} = \frac{.202 \times 150 \times 27.24 \times 12.59}{196} = 53.0$$

Total 27.24

# MASS DEPOSIT

MATERIAL: Fuel Oil AIRSPEED: Constant at 150 mph (130 knots)  
 DATE: 13 July 1962 ALTITUDE: 200 feet  
 FLIGHT #: 3 : Inwind SWATH WIDTH: 1000 feet  
 SAMPLE LINE: A AIRCRAFT COURSE: 270 degrees  
 TIME OF RELEASE: 0520 hours  
 DURATION: 12 seconds  
 FLOW RATE: 196 GPM

STATION	G.P.A.	STATION	G.P.A.	STATION	G.P.A.	STATION	G.P.A.
		51	Trace			76	1.0
		52	Trace			77	0.9
		53	Trace			78	0.9
		54	0.2			79	0.9
		55	0.2			80	0.9
		56	0.2			81	0.8
		57	0.3			82	0.8
		58	0.4			83	0.9
		59	0.4			84	0.8
		60	0.6			85	0.7
		61	0.7			86	0.7
		62	0.8			87	0.8
		63	0.8			88	0.8
		64	0.8			89	0.8
		65	1.1			90	0.8
		66	1.2			91	0.7
		67	1.2			92	0.8
		68	1.1			93	0.8
		69	1.1			94	0.7
		70	1.0			95	0.7
		71	1.0			96	0.7
		72	1.0			97	0.7
		73	1.0			98	0.6
		74	1.0			99	0.6
		75	0.9			100	0.6

$$\% \text{ Recovery} = \frac{.202 \times 150 \times 36.40 \times 20}{196} = 112.5$$

Total 36.40

# MASS DEPOSIT

MATERIAL: Fuel Oil      AIRSPEED: Constant at 150 mph (130 knots)  
 DATE: 13 July 1962      ALTITUDE: 150      Feet  
 FLIGHT #: 4 ; Inwind      SWATH WIDTH: 860      feet  
 SAMPLE LINE: A      AIRCRAFT COURSE: 270      degrees  
 TIME OF RELEASE: 0540      hours  
 DURATION: 14 seconds  
 FLOW RATE: 196      GPM

STATION	G.P.A.	STATION	G.P.A.	STATION	G.P.A.	STATION	G.P.A.
Stations 1-55 blank		56	Blank	81	0.9		
		57	0.1	82	0.8		
		58	0.2	83	0.8		
		59	0.2	84	0.7		
		60	0.35	85	0.8		
		61	0.4	86	0.7		
		62	0.5	87	0.8		
		63	0.8	88	0.75		
		64	0.8	89	0.7		
		65	0.8	90	0.6		
		66	0.7	91	0.7		
		67	0.8	92	0.8		
		68	0.9	93	0.7		
		69	0.9	94	0.8		
		70	0.9	95	0.7		
		71	0.9	96	0.6		
		72	0.9	97	0.6		
		73	0.9	98	0.6		
		74	0.8	99	0.6		
		75	0.8	100	0.6		
		76	0.9				
		77	0.9				
		78	0.9				
		79	0.9				
		80	0.9				

$$\% \text{ Recovery} = \frac{.202 \times 150 \times 31.40 \times 15.3}{196} = 74.3$$

Total 31.40

# MASS DEPOSIT

MATERIAL: Fuel Oil AIRSPEED: Constant at 150 mph (130 knots)  
 DATE: 13 July 1962 ALTITUDE: 150 feet  
 FLIGHT #: 5 ; Crosswind SWATH WIDTH: 2000 feet  
 SAMPLE LINE: D AIRCRAFT COURSE: 225 degrees  
 TIME OF RELEASE: 0602 hours  
 DURATION: 18 seconds  
 FLOW RATE: 196 PGM

STATION	G.P.A.	STATION	G.P.A.	STATION	G.P.A.	STATION	G.P.A.
1	Trace	26	0.04	51	0.2	76	1.0
2	"	27	0.04	52	0.2	77	1.0
3	0.04	28	0.02	53	0.2	78	0.9
4	0.02	29	0.04	54	0.3	79	0.9
5	0.02	30	0.02	55	0.3	80	0.95
6	Trace	31	0.04	56	0.3	81	1.0
7	"	32	0.06	57	0.4	82	0.9
8	0.02	33	0.1	58	0.4	83	0.8
9	0.02	34	0.2	59	0.4	84	0.8
10	0.02	35	0.2	60	0.3	85	0.7
11	0.02	36	0.2	61	0.3	86	0.7
12	0.02	37	0.2	62	0.4	87	0.5
13	0.02	38	0.2	63	0.4	88	0.7
14	0.02	39	0.2	64	0.5	89	0.5
15	0.03	40	0.3	65	0.5	90	0.4
16	0.03	41	0.3	66	0.5	91	0.1
17	0.03	42	0.4	67	0.6	92	Trace
18	0.03	43	0.4	68	0.8	93	"
19	0.04	44	0.4	69	0.8	94	"
20	0.04	45	0.4	70	0.8	95	"
21	0.04	46	0.4	71	0.9	96	"
22	0.04	47	0.4	72	0.9	97	"
23	0.04	48	0.3	73	0.9	98	"
24	0.04	49	0.2	74	0.9	99	"
25	0.06	50	0.2	75	0.9	100	"

Total 30.85

# MASS DEPOSIT

MATERIAL: Fuel Oil AIRSPEED: Constant at 150 mph (130 knots)  
 DATE: 13 July 1962 ALTITUDE: 150 feet  
 FLIGHT #: 6; Crosswind SWATH WIDTH: 1940 feet  
 SAMPLE LINE: D AIRCRAFT COURSE: 225 degrees  
 TIME OF RELEASE: 0617 hours  
 DURATION: 20 seconds  
 FLOW RATE: 196 GPM

STATION	G.P.A.	STATION	G.P.A.	STATION	G.P.A.	STATION	G.P.A.
1	Trace	26	0.02	51	0.2	76	0.6
2	"	27	0.04	52	0.3	77	0.8
3	"	28	0.04	53	0.3	78	0.8
4	"	29	0.04	54	0.4	79	0.9
5	"	30	0.04	55	0.4	80	0.8
6	"	31	0.04	56	0.5	81	0.8
7	"	32	0.06	57	0.5	82	1.0
8	0.02	33	0.06	58	0.5	83	1.0
9	0.02	34	0.08	59	0.6	84	1.0
10	0.04	35	0.08	60	0.7	85	0.9
11	0.02	36	0.08	61	0.7	86	1.0
12	0.04	37	0.1	62	0.8	87	1.0
13	0.04	38	0.1	63	0.8	88	1.0
14	Trace	39	0.1	64	0.8	89	0.9
15	0.02	40	0.1	65	0.8	90	0.9
16	0.02	41	0.2	66	0.7	91	0.9
17	0.02	42	0.3	67	0.8	92	0.9
18	0.02	43	0.3	68	0.7	93	0.75
19	0.02	44	0.3	69	0.7	94	0.8
20	0.01	45	0.3	70	0.8	95	0.75
21	0.01	46	0.3	71	0.7	96	0.3
22	0.01	47	0.3	72	0.5	97	0.1
23	0.01	48	0.2	73	0.5	98	0.08
24	0.01	49	0.2	74	0.5	99	-
25	0.01	50	0.2	75	0.5	100	-

Total 36.60

Test No.: 217 Date Calibrated: 13 July 1962 Date Test Flown: 14 July  
Material Used: 2 parts fuel oil + 1 part Purple Calibrated Flow Rate: 19.7 GPM

Nozzle Information				Location
Ident	Qty	Description		
o	56	3" 6135 S.S. Check valve body, only		1 thru 7, 13 thru 21, 39 thru 40
+	16	1/4" 6135 " " "		1 thru 41
Total	72			39 thru 40

Nozzle location, same on each boom. No. 1 is most inboard position.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	-----

Engine throttle position: 7/4 open

System pressure at engine; spraying: 25 psi

length of test run:	30	seconds	Gallons pumped:	98.5
---------------------	----	---------	-----------------	------

Remarks:

# MASS DEPOSIT

MATERIAL: 2 Fuel Oil, 1 Purple      AIRSPEED: Constant at 150 mph (130 knots)  
 DATE: 14 July 1962      ALTITUDE: 150      feet  
 FLIGHT #: 1 ; Inwind      SWATH WIDTH: 1400      feet  
 SAMPLE LINE: C      AIRCRAFT COURSE: 180      degrees  
 TIME OF RELEASE: 0451      hours  
 DURATION: 15      seconds  
 FLOW RATE: 197      GPM

STATION	G.P.A.	STATION	G.P.A.	STATION	G.P.A.	STATION	G.P.A.
1	Trace	25	0.04	51	0.6		
2	"	27	0.04	52	0.7		
3	"	28	0.04	53	0.75		
4	"	29	0.06	54	0.8		
5	"	30	0.06	55	0.8		
6	"	31	0.06	56	1.0		
7	"	32	0.06	57	1.2		
8	"	33	0.06	58	1.1		
9	"	34	0.06	59	1.0		
10	"	35	0.06	60	1.1		
11	"	36	0.04	61	0.9		
12	"	37	0.04	62	0.6		
13	"	38	0.06	63	0.6		
14	"	39	0.08	64	0.6		
15	"	40	0.08	65	0.8		
16	"	41	0.1	66	0.9		
17	"	42	0.1	67	1.0		
18	"	43	0.3	68	0.9		
19	"	44	0.3	69	1.0		
20	"	45	0.3	70	1.1		
21	"	46	0.3	71	0.4		
22	"	47	0.3	72	-		
23	"	48	0.4	Stations 73-100 blank			
24	0.02	49	0.4				
25	0.04	50	0.5				

$$\% \text{ Recovery} = \frac{.202 \times 150 \times 21.75 \times 17.49}{197} = 58.5$$

Total 21.75

# MASS DEPOSIT

MATERIAL: 2 Fuel Oil, 1 Purple      AIRSPEED: Constant at 150 mph (130 knots)  
 DATE: 14 July 1962      ALTITUDE: 150 feet  
 FLIGHT #: 2; Inwind      SWATH WIDTH: 780 feet  
 SAMPLE LINE: C      AIRCRAFT COURSE: 180 degrees  
 TIME OF RELEASE: 0509 hours  
 DURATION: 16 seconds  
 FLOW RATE: 197 GPM

STATION	G.P.A.	STATION	G.P.A.	STATION	G.P.A.	STATION	G.P.A.
Stations 1-40	blank	41	Trace	66	1.1		
		42	"	67	1.0		
		43	0.06	68	1.1		
		44	0.04	69	1.1		
		45	0.06	70	0.95		
		46	0.06	71	0.8		
		47	0.1	72	0.9		
		48	0.1	73	1.0		
		49	0.1	74	1.0		
		50	0.1	75	1.0		
		51	0.2	76	1.0		
		52	0.3	77	1.0		
		53	0.4	78	1.1		
		54	0.5	79	1.2		
		55	0.5	80	0.1		
		56	0.5	81	-		
		57	0.55	Stations 82-100			
		58	0.6	blank			
		59	0.6				
		60	0.5				
		61	0.5				
		62	0.6				
		63	0.8				
		64	0.95				
		65	1.1				

$$\% \text{ Recovery} = \frac{.202 \times 150 \times 23.57 \times 16.38}{197} = 59.4$$

Total 23.57



# MASS DEPOSIT

MATERIAL: 2 Fuel Oil, 1 Purple      AIRSPEED: Constant at 150 mph (130 knots)  
 DATE: 14 July 1962      ALTITUDE: 150      feet  
 FLIGHT #: 3; Crosswind      SWATH WIDTH: 2000      feet  
 SAMPLE LINE: D      AIRCRAFT COURSE: 225      degrees  
 TIME OF RELEASE: 0542      hours  
 DURATION: 17      seconds  
 FLOW RATE: 197      GPM

STATION	G.P.A.	STATION	G.P.A.	STATION	G.P.A.	STATION	G.P.A.
1	0.06	26	0.2	51	0.35	76	0.7
2	0.06	27	0.2	52	0.3	77	0.75
3	0.08	28	0.2	53	0.3	78	0.8
4	0.08	29	0.2	54	0.3	79	0.85
5	0.08	30	0.2	55	0.3	80	0.9
6	0.08	31	0.1	56	0.3	81	0.9
7	0.08	32	0.08	57	0.3	82	0.9
8	0.08	33	0.06	58	0.4	83	0.9
9	0.08	34	0.06	59	0.4	84	1.0
10	0.08	35	0.1	60	0.4	85	1.0
11	0.08	36	0.08	61	0.4	86	1.0
12	0.1	37	0.08	62	0.4	87	0.9
13	0.08	38	0.08	63	0.4	88	0.95
14	0.1	39	0.1	64	0.4	89	0.95
15	0.1	40	0.1	65	0.4	90	1.0
16	0.1	41	0.1	66	0.4	91	1.0
17	0.1	42	0.2	67	0.4	92	1.0
18	0.1	43	0.2	68	0.45	93	0.9
19	0.1	44	0.2	69	0.45	94	0.9
20	0.1	45	0.2	70	0.45	95	0.8
21	0.2	46	0.3	71	0.5	96	0.8
22	0.2	47	0.3	72	0.5	97	0.8
23	0.2	48	0.3	73	0.5	98	0.7
24	0.2	49	0.3	74	0.6	99	0.5
25	0.2	50	0.3	75	0.7	100	0.08

Total 38.24

# MASS DEPOSIT

MATERIAL: 2 Fuel Oil, 1 Purple      AIRSPEED: Constant at 150 mph (130 knots)  
 DATE: 14 July 1962      ALTITUDE: 150 feet  
 FLIGHT #: 4 ; Inwind      SWATH WIDTH: 1020 feet  
 SAMPLE LINE: A      AIRCRAFT COURSE: 270 degrees  
 TIME OF RELEASE: 0610 hours  
 DURATION: 10 seconds  
 FLOW RATE: 197 GPM

STATION	G.P.A.	STATION	G.P.A.	STATION	G.P.A.	STATION	G.P.A.
Stations 1-25 Blank		26	-	51	0.4	76	Trace
		27	Trace	52	0.5	77	"
		28	0.15	53	0.4	78	"
		29	0.5	54	0.4	79	-
		30	0.6	55	0.4	Stations 80-100	
		31	0.7	56	0.4	blank	
		32	0.9	57	0.4		
		33	0.9	58	0.4		
		34	0.75	59	0.4		
		35	0.75	60	0.4		
		36	0.9	61	0.2		
		37	0.9	62	0.2		
		38	0.9	63	0.3		
		39	0.9	64	0.2		
		40	1.0	65	0.2		
		41	0.95	66	0.1		
		42	0.9	67	0.1		
		43	1.0	68	0.1		
		44	0.95	69	0.06		
		45	0.8	70	0.03		
		46	0.6	71	0.04		
		47	0.5	72	0.02		
		48	0.4	73	0.01		
		49	0.3	74	0.01		
		50	0.3	75	0.01		

$$\% \text{ Recovery} = \frac{.202 \times 150 \times 22.23 \times 20}{197} = 68.4$$

Total 22.23

# MASS DEPOSIT

MATERIAL: 2 Fuel Oil, 1 Purple      AIRSPEED: Constant at 150 mph (130 knots)  
 DATE: 15 July 1962      ALTITUDE: 150 feet  
 FLIGHT #: 1; Inwind      SWATH WIDTH: 600 feet  
 SAMPLE LINE: D      AIRCRAFT COURSE: 225 degrees  
 TIME OF RELEASE: 0458 hours  
 DURATION: 15 seconds  
 FLOW RATE: 197 GPM

STATION	G.P.A.	STATION	G.P.A.	STATION	G.P.A.	STATION	G.P.A.
1	-	26	0.6				
2	0.02	27	0.8				
3	0.04	28	1.0				
4	0.04	29	1.0				
5	0.08	30	1.2				
6	0.1	31	1.7				
7	0.2	32	0.3				
8	0.3	33	-				
9	0.35	Stations 34-100 Blank					
10	0.4						
11	0.5						
12	0.5						
13	0.7						
14	0.7						
15	0.7						
16	0.9						
17	1.2						
18	1.9						
19	1.7						
20	2.1						
21	2.3						
22	1.2						
23	0.8						
24	0.8						
25	0.6						

$$\% \text{ Recovery} = \frac{.202 \times 150 \times 24.73 \times 17.3}{197} = 65.8$$

Total 24.73

# MASS DEPOSIT

MATERIAL: 2 Fuel Oil, 1 Purple      AIRSPEED: Constant at 150 mph (130 knots)  
 DATE: 15 July 1962      ALTITUDE: 150 feet  
 FLIGHT #: 2; Inwind      SWATH WIDTH: 1080 feet  
 SAMPLE LINE: A      AIRCRAFT COURSE: 270 degrees  
 TIME OF RELEASE: 0520 hours  
 DURATION: 20 seconds  
 FLOW RATE: 197 GPM

STATION	G.P.A.	STATION	G.P.A.	STATION	G.P.A.	STATION	G.P.A.
Stations 1-25 blank		26	-	51	0.9	76	Trace
		27	-	52	0.9	77	"
		28	-	53	0.95	78	"
		29	Trace	54	1.2	79	"
		30	"	55	1.3	80	"
		31	"	56	0.95	81	"
		32	"	57	0.8	82	"
		33	"	58	0.8	83	"
		34	"	59	0.75	84	-
		35	"	60	0.8	Stations 85-100	
		36	"	61	0.95	blank	
		37	"	62	1.3		
		38	"	63	1.6		
		39	"	64	1.3		
		40	"	65	0.95		
		41	0.06	66	1.0		
		42	0.08	67	0.7		
		43	0.08	68	0.7		
		44	0.1	69	0.6		
		45	0.2	70	0.8		
		46	0.3	71	0.5		
		47	0.4	72	0		
		48	0.4	73	0.8		
		49	0.5	74	0.02		
		50	0.55	75	Trace		

$$\% \text{ Recovery} = \frac{.202 \times 150 \times 22.92 \times 17.1}{197} = 60.3$$

Total 22.92

# MASS DEPOSIT

MATERIAL: 2 Fuel Oil, 1 Purple      AIRSPEED: Constant at 150 mph (130 knots)  
 DATE: 15 July 1962      ALTITUDE: 150 feet  
 FLIGHT #: 3; Inwin.<sup>1</sup>      SWATH WIDTH: 780 feet  
 SAMPLE LINE: A      AIRCRAFT COURSE: 270 degrees  
 TIME OF RELEASE: 0539 hours  
 DURATION: 19 seconds  
 FLOW RATE: 197 GPM

STATION	G.P.A.	STATION	G.P.A.	STATION	G.P.A.	STATION	G.P.A.
Stations 1-59 blank		60	-	86	0.7		
		61	0.5	87	0.5		
		62	0.6	88	0.3		
		63	0.9	89	0.2		
		64	0.9	90	0.1		
		65	0.8	91	0.2		
		66	0.8	92	0.1		
		67	0.8	93	0.1		
		68	0.9	94	0.2		
		69	0.8	95	0.2		
		70	0.8	96	0.2		
		71	0.7	97	0.3		
		72	0.8	98	0.3		
		73	0.7	99	0.4		
		74	0.5	100	0.5		
		75	0.9				
		76	1.0				
		77	1.2				
		78	1.1				
		79	1.0				
		80	0.9				
		81	0.9				
		82	0.8				
		83	0.8				
		84	0.7				
		85	0.7				

$$\% \text{ Recovery} = \frac{.202 \times 150 \times 24.80 \times 20}{197} = 76.3$$

Total 24.80

# MASS DEPOSIT

MATERIAL: 2 Fuel Oil, 1 Purple      AIRSPEED: Constant at 150 mph (130 knots)  
 DATE: 15 July 1962      ALTITUDE: 150 feet  
 FLIGHT #: 4 ; Crosswind      SWATH WIDTH: 1540 feet  
 SAMPLE LINE: D      AIRCRAFT COURSE: 225 degrees  
 TIME OF RELEASE: 0605 hours  
 DURATION: 21 seconds  
 FLOW RATE: 197 GPM

STATION	G.P.A.	STATION	G.P.A.	STATION	G.P.A.	STATION	G.P.A.
1	0.1	26	0.45	51	0.7	76	Trace
2	0.1	27	0.5	52	0.8	77	"
3	0.1	28	0.5	53	0.9	78	"
4	0.1	29	0.5	54	0.6	79	-
5	0.1	30	0.5	55	0.6	Stations 80-100 blank	
6	0.1	31	0.6	56	0.7		
7	0.1	32	0.6	57	0.8		
8	0.1	33	0.6	58	0.8		
9	0.1	34	0.6	59	0.8		
10	0.2	35	0.65	60	0.9		
11	0.2	36	0.75	61	0.8		
12	0.2	37	0.8	62	0.8		
13	0.2	38	0.8	63	0.7		
14	0.25	39	0.85	64	0.7		
15	0.25	40	0.9	65	0.8		
16	0.25	41	0.9	66	1.0		
17	0.3	42	0.9	67	1.0		
18	0.3	43	0.9	68	0.9		
19	0.35	44	0.9	69	0.7		
20	0.4	45	0.9	70	0.6		
21	0.4	46	0.8	71	0.4		
22	0.4	47	0.9	72	0.3		
23	0.4	48	0.8	73	0.1		
24	0.4	49	0.8	74	0.02		
25	0.4	50	0.7	75	Trace		

Total 40.32

# MASS DEPOSIT.

MATERIAL: 2 Fuel Oil, 1 Purple      AIRSPEED: Constant at 150 mph (130 knots)  
 DATE: 16 July 1962      ALTITUDE: 150      feet  
 FLIGHT:#: 1 ; Crosswind      SWATH WIDTH: 920      feet  
 SAMPLE LINE: A      AIRCRAFT COURSE: 90      degrees  
 TIME OF RELEASE: 0452      hours  
 DURATION: 16      seconds  
 FLOW RATE: 197      GPM

STATION	G.P.A.	STATION	G.P.A.	STATION	G.P.A.	STATION	G.P.A.
1	0.4	26	0.7				
2	0.4	27	0.85				
3	0.5	28	1.0				
4	0.5	29	0.95				
5	0.45	30	0.95				
6	0.5	31	1.0				
7	0.25	32	1.2				
8	0.35	33	0.95				
9	0.4	34	1.0				
10	0.5	35	0.9				
11	0.55	36	1.0				
12	0.6	37	0.95				
13	0.7	38	0.95				
14	0.7	39	0.9				
15	0.75	40	1.0				
16	0.65	41	0.9				
17	0.7	42	1.0				
18	0.85	43	0.95				
19	0.8	44	1.0				
20	0.85	45	0.9				
21	0.85	46	0.95				
22	0.85	47	0.15				
23	0.85	48	-				
24	0.8	Stations 49 -100 Blank					
25	0.65						

Total 35.55

# MASS DEPOSIT

MATERIAL: 2 Fuel Oil, 1 Purple      AIRSPEED: Constant at 150 mph (130 knots)  
 DATE: 16 July 1962      ALTITUDE: 150 feet  
 FLIGHT #: 2; Inwind      SWATH WIDTH: 1080 feet  
 SAMPLE LINE: C      AIRCRAFT COURSE: 180 degrees  
 TIME OF RELEASE: 0510 hours  
 DURATION: 20 seconds  
 FLOW RATE: 197 GPM

STATION	G.P.A.	STATION	G.P.A.	STATION	G.P.A.	STATION	G.P.A.
Stations 1-44 blank		45	-	70	0.8	95	0.04
		46	0.15	71	0.7	96	0.02
		47	0.5	72	0.7	97	0.03
		48	0.5	73	0.7	98	0.01
		49	0.9	74	0.65	99	0.1
		50	1.1	75	0.5	100	0.05
		51	1.0	76	0.5		
		52	0.8	77	0.45		
		53	0.9	78	0.5		
		54	0.9	79	0.5		
		55	0.95	80	0.5		
		56	1.0	81	0.5		
		57	1.0	82	0.45		
		58	1.3	83	0.45		
		59	0.95	84	0.45		
		60	1.0	85	0.4		
		61	1.2	86	0.25		
		62	0.9	87	0.25		
		63	1.0	88	0.25		
		64	0.8	89	0.2		
		65	0.95	90	0.2		
		66	0.9	91	0.1		
		67	0.95	92	0.08		
		68	0.8	93	0.08		
		69	0.8	94	0.06		

$$\% \text{ Recovery} = \frac{.202 \times 150 \times 31.81 \times 20}{197} = 97.8$$

Total 31.81



# MASS DEPOSIT

MATERIAL: 2 Fuel Oil, 1 Purple AIRSPEED: Constant at 150 mph (130 knots)

DATE: 17 July 1962 ALTITUDE: 150 feet

FLIGHT #: 1; Inwind SWATH WIDTH: 1820 feet

SAMPLE LINE: A AIRCRAFT COURSE: 270 degrees

TIME OF RELEASE: 0459, 0501, 0503, 0505 hours

DURATION: 12, 15, 15, 16 seconds

FLOW RATE: 197 GPM

STATION	G.P.A.	STATION	G.P.A.	STATION	G.P.A.	STATION	G.P.A.
1	0.85	26	0.85	51	0.9	76	0.7
2	0.7	27	0.9	52	0.8	77	0.9
3	0.9	28	0.95	53	0.6	78	1.3
4	0.75	29	1.1	54	0.5	79	1.7
5	0.75	30	1.0	55	Trace	80	1.2
6	0.8	31	1.0	56	"	81	1.3
7	0.7	32	1.1	57	"	82	0.9
8	0.8	33	1.1	58	"	83	0.9
9	0.9	34	1.2	59	"	84	0.9
10	0.9	35	1.1	60	"	85	0.9
11	0.95	36	1.0	61	"	86	0.9
12	0.9	37	1.2	62	"	87	0.9
13	0.8	38	1.3	63	"	88	1.3
14	0.8	39	1.3	64	"	89	2.1
15	0.5	40	1.4	65	"	90	2.0
16	0.5	41	1.3	66	"	91	Trace
17	0.4	42	1.2	67	"	92	-
18	0.5	43	1.1	68	0.08	Stations 93-100 blank	
19	0.7	44	0.9	69	0.1		
20	0.75	45	0.8	70	0.1		
21	0.8	46	0.8	71	0.1		
22	0.85	47	0.95	72	0.2		
23	0.9	48	0.9	73	0.3		
24	0.95	49	0.9	74	0.4		
25	0.9	50	0.9	75	0.4		

$$\% \text{ Recovery} = \frac{.202 \times 150 \times 67.88 \times 20}{4 \times 197} = 52.2$$

Total 67.88

# MASS DEPOSIT

MATERIAL: 2 Fuel Oil, 1 Purple      AIRSPEED: Constant at 150 mph (130 knots)  
 DATE: 17 July 1962      ALTITUDE: 150 feet  
 FLIGHT #: 2; Crosswind      SWATH WIDTH: 1820 feet  
 SAMPLE LINE: C      AIRCRAFT COURSE: 180 degrees  
 TIME OF RELEASE: 0525, 0527, 0529, 0531 hours  
 DURATION: 13, 15, 16, 19 seconds  
 FLOW RATE: 197 GPM

STATION	G.P.A.	STATION	G.P.A.	STATION	G.P.A.	STATION	G.P.A.
1	1.0	26	0.9	51	1.0	76	0.85
2	0.95	27	1.0	52	1.0	77	0.85
3	0.95	28	1.0	53	1.0	78	0.9
4	1.0	29	1.0	54	1.0	79	1.0
5	0.9	30	1.0	55	1.0	80	1.0
6	0.9	31	1.0	56	1.0	81	1.0
7	0.8	32	1.0	57	1.0	82	1.0
8	0.85	33	1.0	58	1.0	83	1.0
9	0.8	34	1.0	59	1.0	84	0.9
10	0.75	35	1.0	60	0.9	85	0.7
11	0.7	36	1.0	61	0.9	86	0.6
12	0.65	37	1.0	62	0.9	87	0.4
13	0.7	38	1.0	63	0.8	88	0.4
14	0.75	39	1.1	64	0.8	89	0.1
15	0.75	40	1.0	65	0.8	90	0.08
16	0.75	41	1.0	66	0.7	91	0.06
17	0.8	42	1.1	67	0.7	92	-
18	0.8	43	0.95	68	0.85	Stations 93-100 blank	
19	0.8	44	0.95	69	0.75		
20	0.8	45	1.0	70	0.8		
21	0.8	46	1.0	71	0.8		
22	0.8	47	1.0	72	0.8		
23	0.8	48	1.1	73	0.8		
24	0.8	49	1.1	74	0.8		
25	0.85	50	1.0	75	0.9		

Total 79.09

# MASS MEDIAN DIAMETER

DATE: 13 July 1962 SPREAD FACTOR: 6.0  
 FLIGHT #: 5; Crosswind CONVERSION FACTOR: 2.5  
 SAMPLE LINE: D PAPER: Kromekote (Red)  
 FLOW RATE: 196 GPM SPRAY MATERIAL: Fuel Oil

$$\text{MMD} = \frac{\text{Spot D-max}}{\text{Spread Factor} \times \text{Conv. Factor}}$$

$$\text{Spherical Drop Size} = \frac{\text{Spot Dia.}}{\text{Spread Factor}}$$

Sta.	Drop #	Size	Sta.	Drop #	Size
89	1	4700			
90	2	3700			
91	3	3200*			
89	4	3000			
90	5	2900			
90	6	2800			
89	7	2600			
88	8	2500			
89	9	2300			
89	10	2100			
89	11	2000			

$$\text{MMD} = \frac{3200}{15} = 213 \text{ microns}$$

$$\text{Max. Sph. Dia.} = \frac{4700}{6} = 783 \text{ microns}$$

$$\text{Min. Sph. Dia.} = \frac{200}{6} = 33 \text{ microns}$$

# MASS MEDIAN DIAMETER

DATE: 13 July 1962 SPREAD FACTOR: 6.0  
 FLIGHT #: 6; Crosswind            CONVERSION FACTOR: 2.5  
 SAMPLE LINE: D TAPER: Kromekote (Red)  
 FLOW RATE: 196 GPM SPRAY MATERIAL: Fuel Oil

$$MMD = \frac{\text{Spot D-max}}{\text{Spread Factor} \times \text{Conv. Factor}}$$

$$\text{Spherical Drop Size} = \frac{\text{Spot Dia.}}{\text{Spread Factor}}$$

Sta.	Drop #	Size	Sta.	Drop #	Size
96	1	4100			
98	2	3700			
97	3	3200*			
97	4	3000			
94	5	2900			
94	6	2800			
95	7	2600			
95	8	2500			
95	9	2400			
95	10	2300			
95	11	2100			

$$MMD = \frac{3200}{15} = 213 \text{ microns}$$

$$\text{Max. Sph. Dia.} = \frac{4100}{6} = 683 \text{ microns}$$

$$\text{Min. Sph. Dia.} = \frac{200}{6} = 33 \text{ microns}$$

# MASS MEDIAN DIAMETER

DATE: 14 July 1962 SPREAD FACTOR: 6.0  
 FLIGHT #: 3; Crosswind CONVERSION FACTOR: 2.5  
 SAMPLE LINE: D PAPER: Kromekote (Red)  
 FLOW RATE: 197 GPM SPRAY MATERIAL: 2 Fuel Oil, 1 Purple

$$MMD = \frac{\text{Spot D-max}}{\text{Spread Factor} \times \text{Conv. Factor}}$$

$$\text{Spherical Drop Size} = \frac{\text{Spot Dia.}}{\text{Spread Factor}}$$

Sta.	Drop #	Size	Sta.	Drop #	Size
100	1	3900			
98	2	3500*			
99	3	3300			
99	4	3200			
99	5	3100			
99	6	3000			
98	7	2900			
98	8	2800			
98	9	2700			
98	10	2600			
98	11	2500			
98	12	2300			
97	13	2100			
97	14	2000			

$$MMD = \frac{3500}{15} = 233 \text{ microns}$$

$$\text{Max. Sph. Dia.} = \frac{3900}{6} = 650 \text{ microns}$$

$$\text{Min. Sph. Dia.} = \frac{200}{6} = 33 \text{ microns}$$

# MASS MEDIAN DIAMETER

DATE: 15 July 1962 SPREAD FACTOR: 6.0  
 FLIGHT #: 4; Crosswind CONVERSION FACTOR: 2.5  
 SAMPLE LINE: D PAPER: Kromekote (Red)  
 FLOW RATE: 197 GPM SPRAY MATERIAL: 2 Fuel Oil, 1 Purple

$$MMD = \frac{\text{Spot D-max}}{\text{Spread Factor} \times \text{Conv. Factor}}$$

$$\text{Spherical Drop Size} = \frac{\text{Spot Dia.}}{\text{Spread Factor}}$$

Sta.	Drop #	Size	Sta.	Drop #	Size
66	1	4400			
73	2	3500*			
70	3	3400			
73	4	3200			
70	5	3000			
71	6	2900			
71	7	2800			
71	8	2600			
71	9	2500			
69	10	2400			

$$MMD = \frac{3500}{15} = 233 \text{ microns}$$

$$\text{Max. Sph. Dia.} = \frac{4400}{6} = 733 \text{ microns}$$

$$\text{Min. Sph. Dia.} = \frac{200}{6} = 33 \text{ microns}$$

# MASS MEDIAN DIAMETER

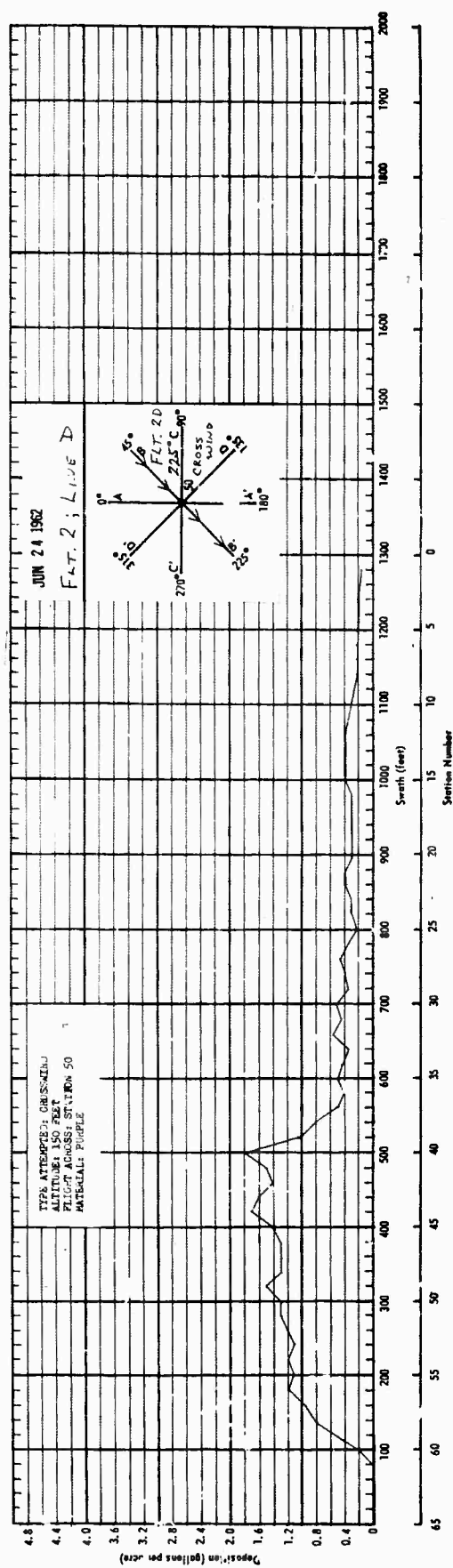
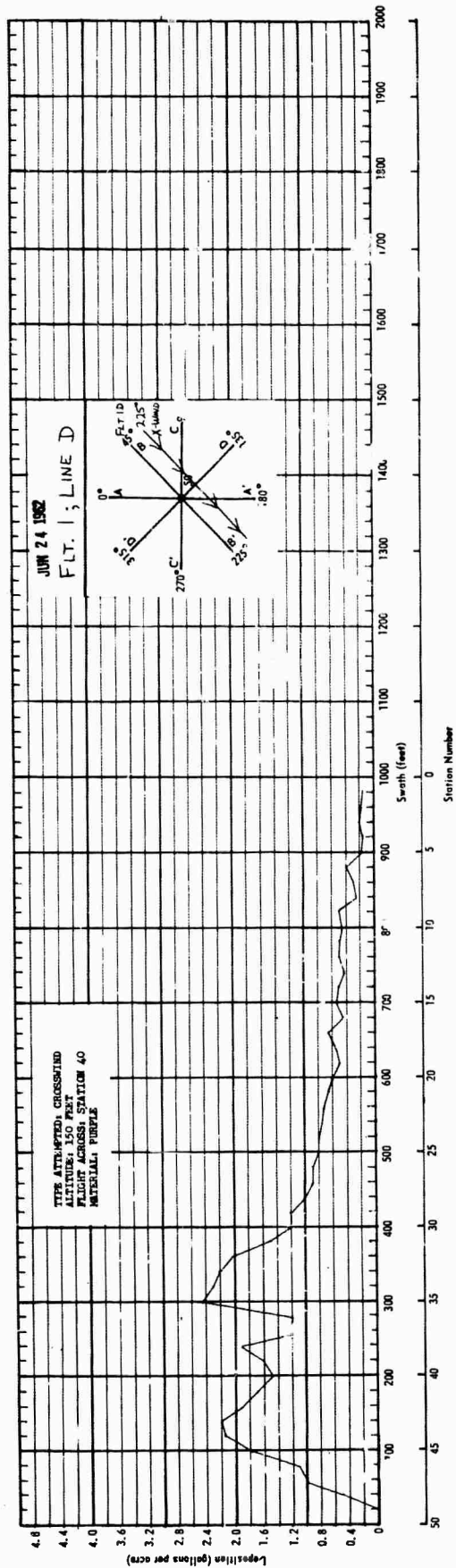
DATE: 16 July 1962 SPREAD FACTOR: 6.0  
 FLIGHT #: 1; Crosswind CONVERSION FACTOR: 2.5  
 SAMPLE LINE: A PAPER: Kromekote (Red)  
 FLOW RATE: 197 GPM SPRAY MATERIAL: 2 Fuel Oil, 1 Purple

Sta.	Drop #	Size	Sta.	Drop #	Size
47	1	4000			
46	2	3500*			
46	3	3300			
46	4	3200			
46	5	3000			
46	6	2900			
44	7	2800			
46	8	2600			
46	9	2500			
44	10	2400			
44	11	2300			
44	12	2200			

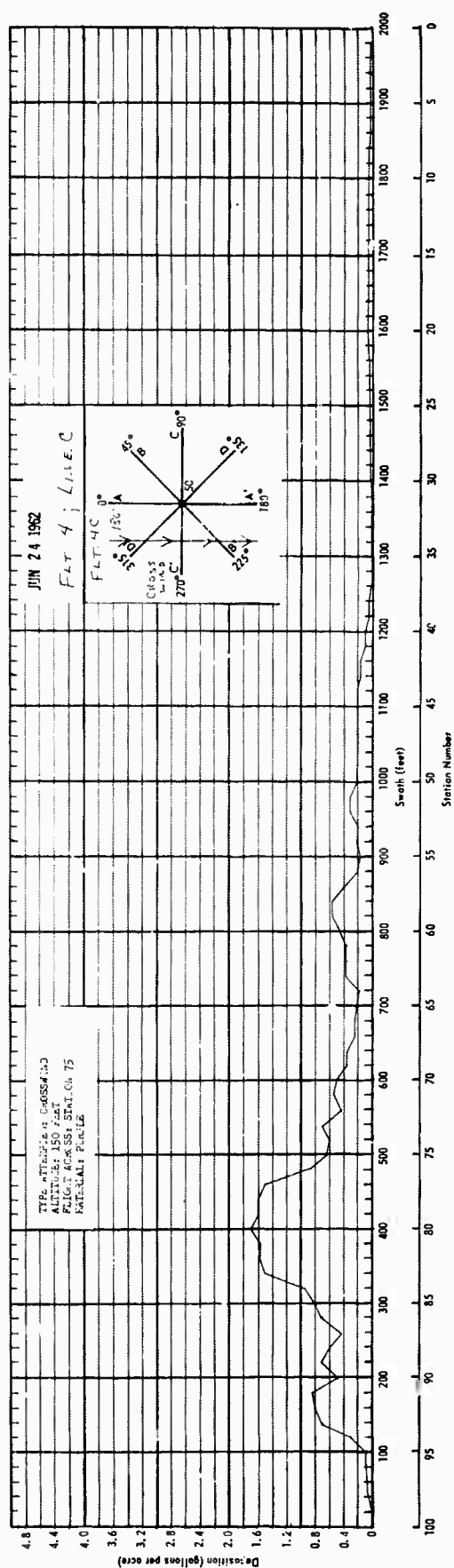
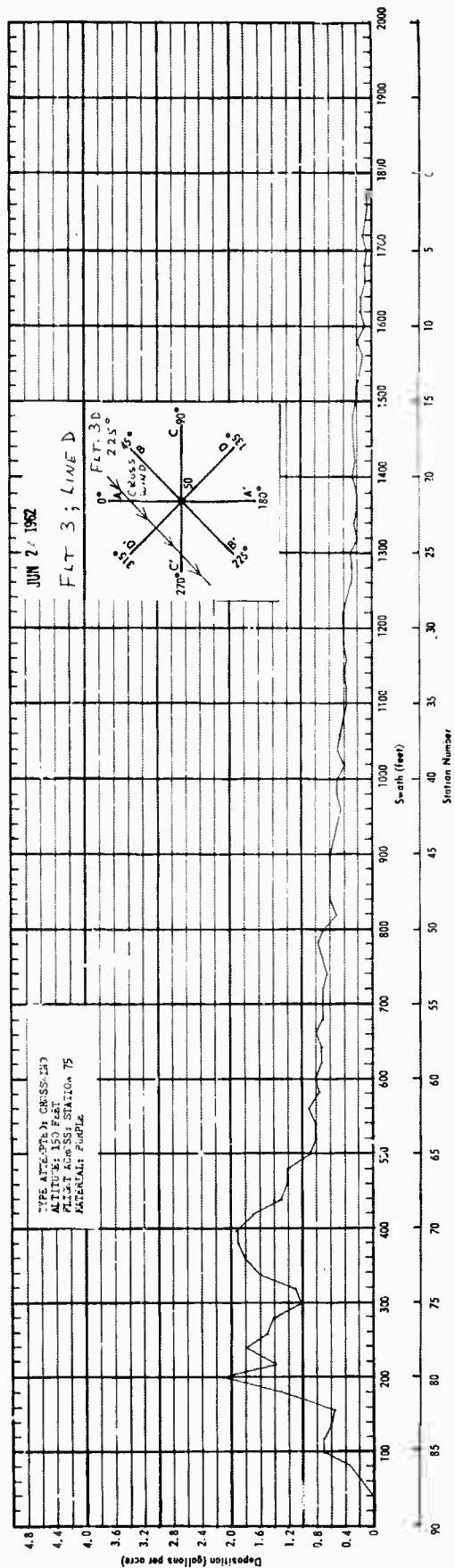
$$\text{MMD} = \frac{3500}{15} = 233 \text{ microns}$$

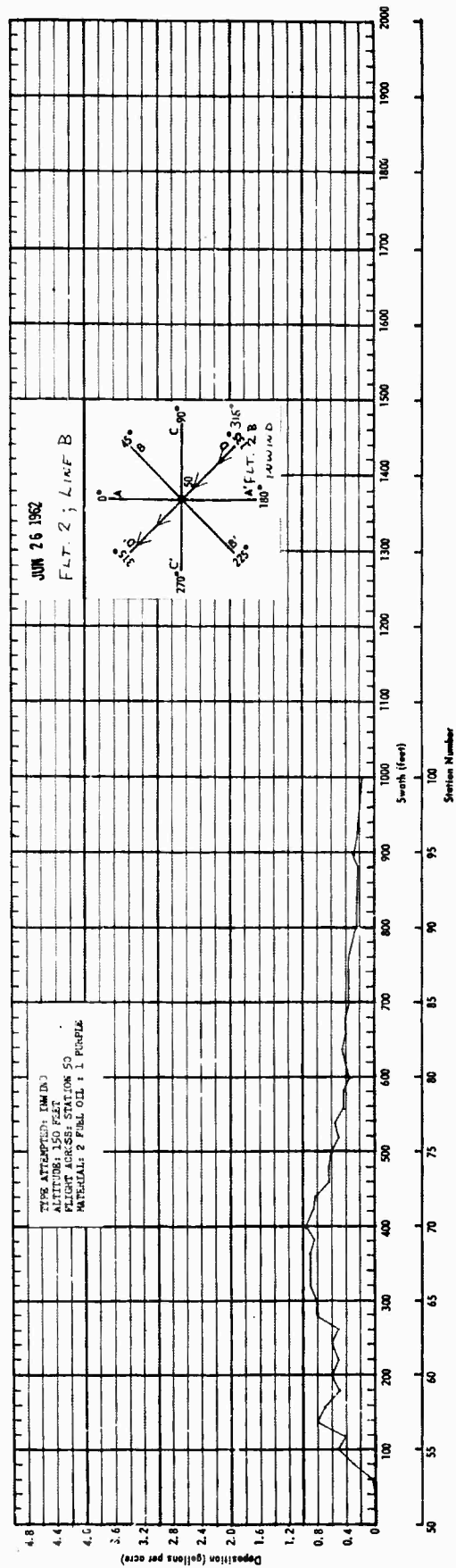
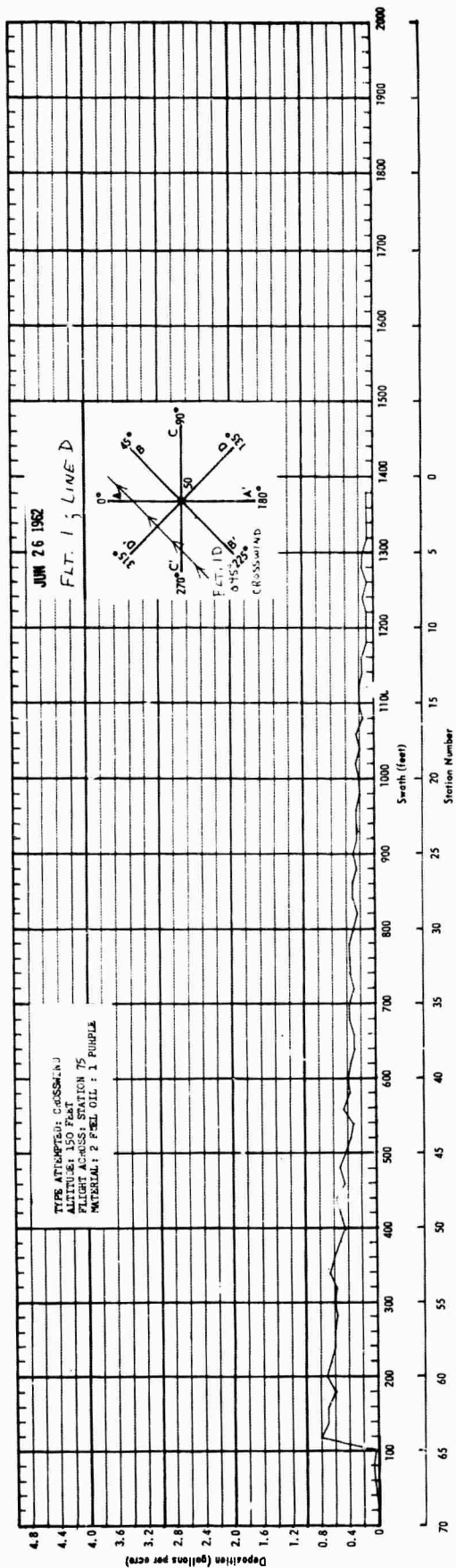
$$\text{Max. Sph. Dia.} = \frac{4000}{6} = 666 \text{ microns}$$

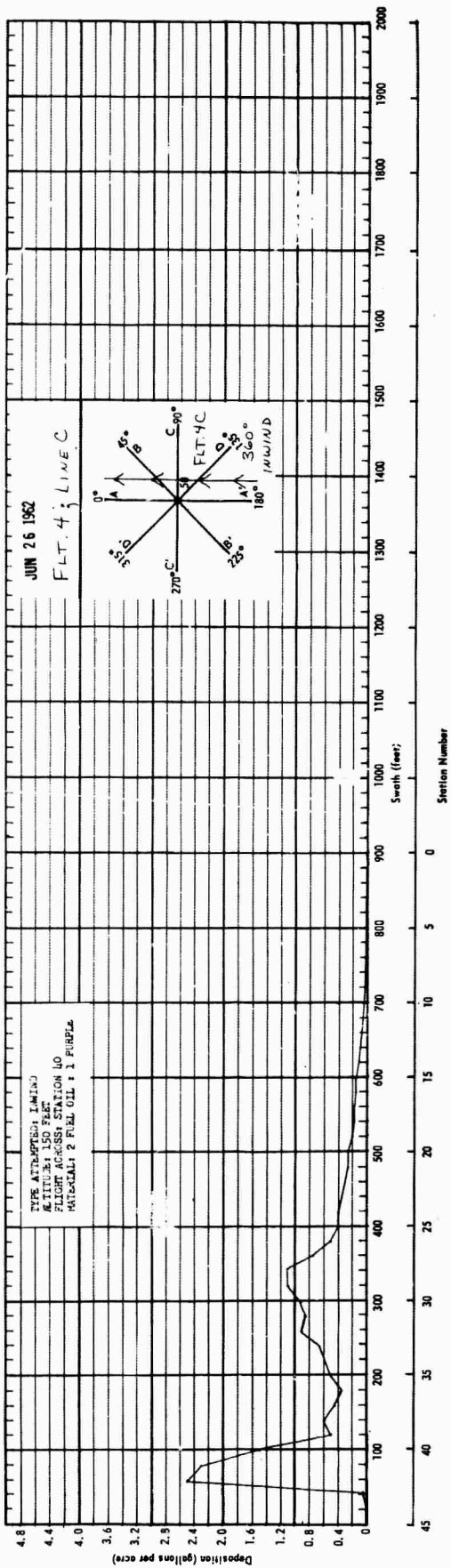
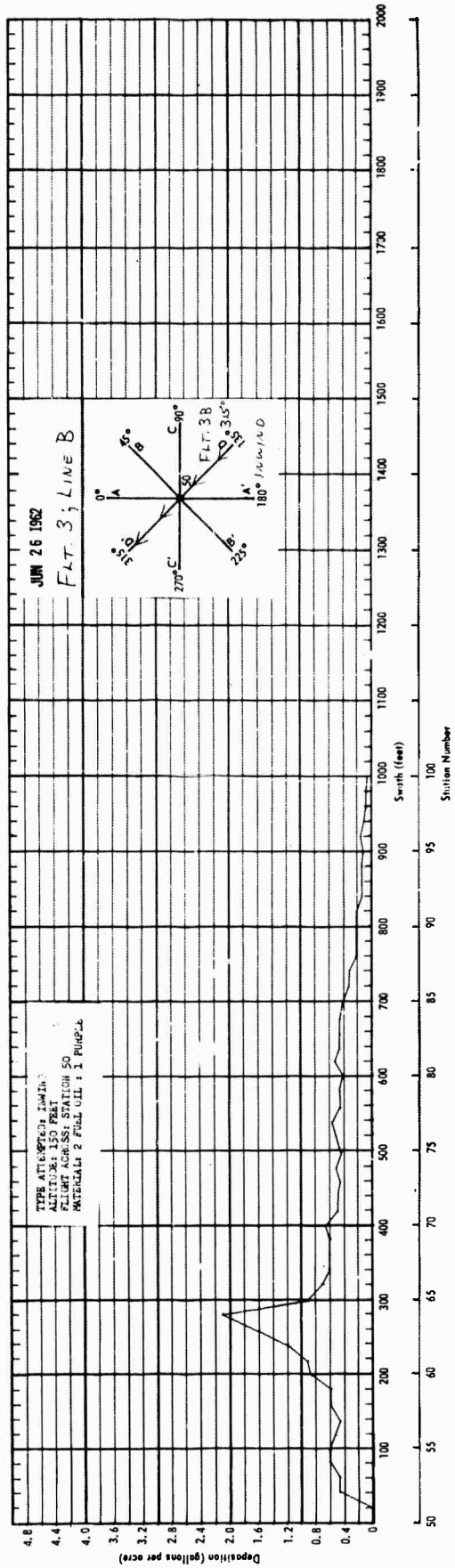
$$\text{Min. Sph. Dia.} = \frac{200}{6} = 33 \text{ microns}$$

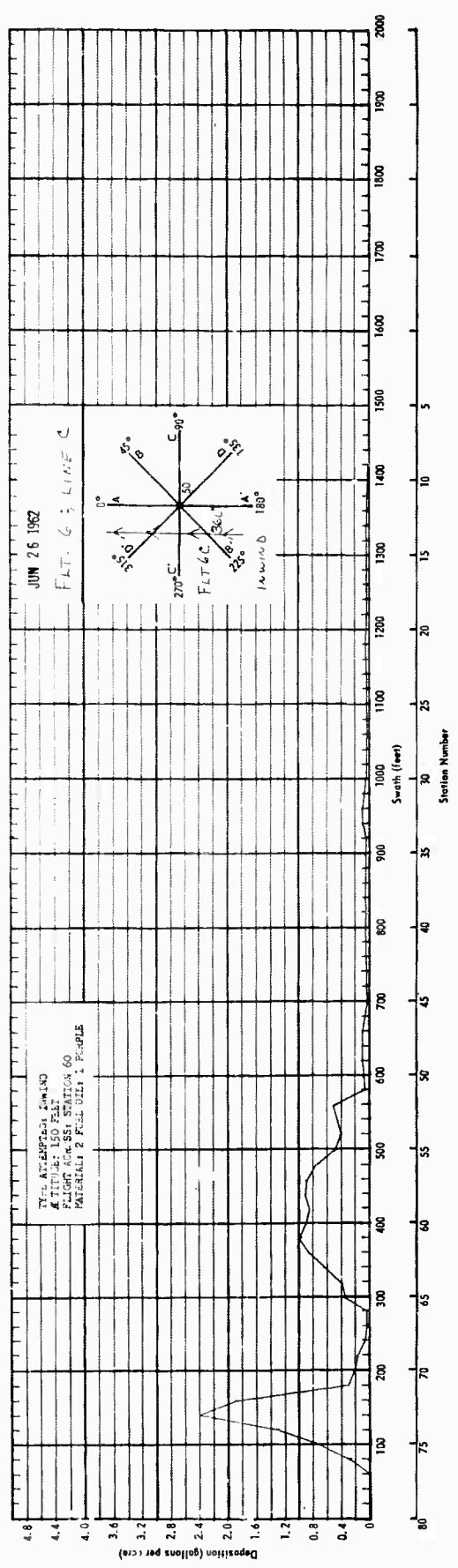
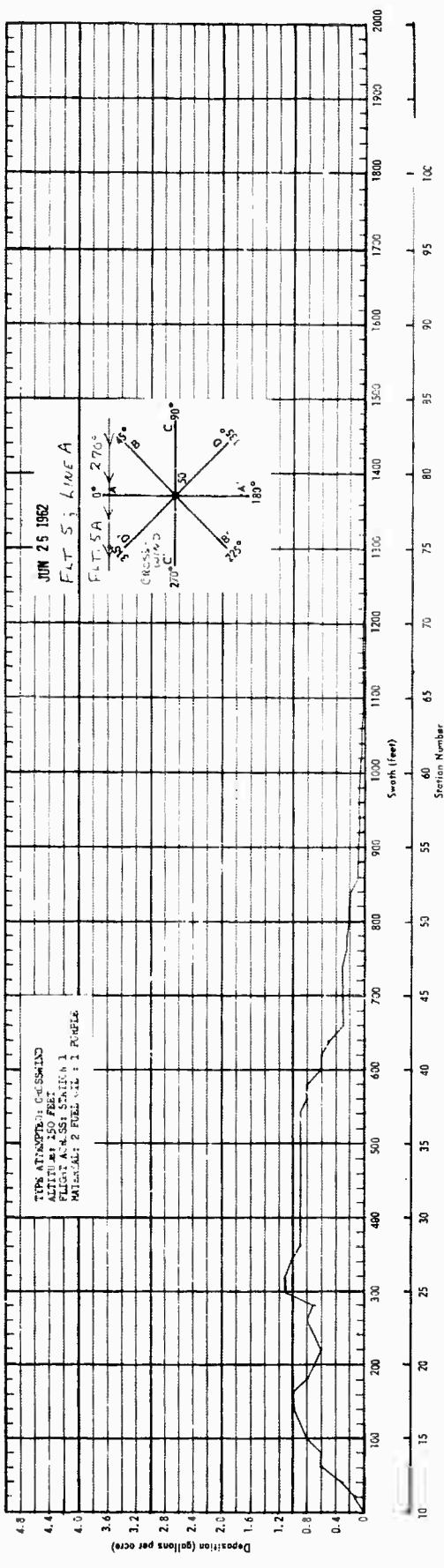


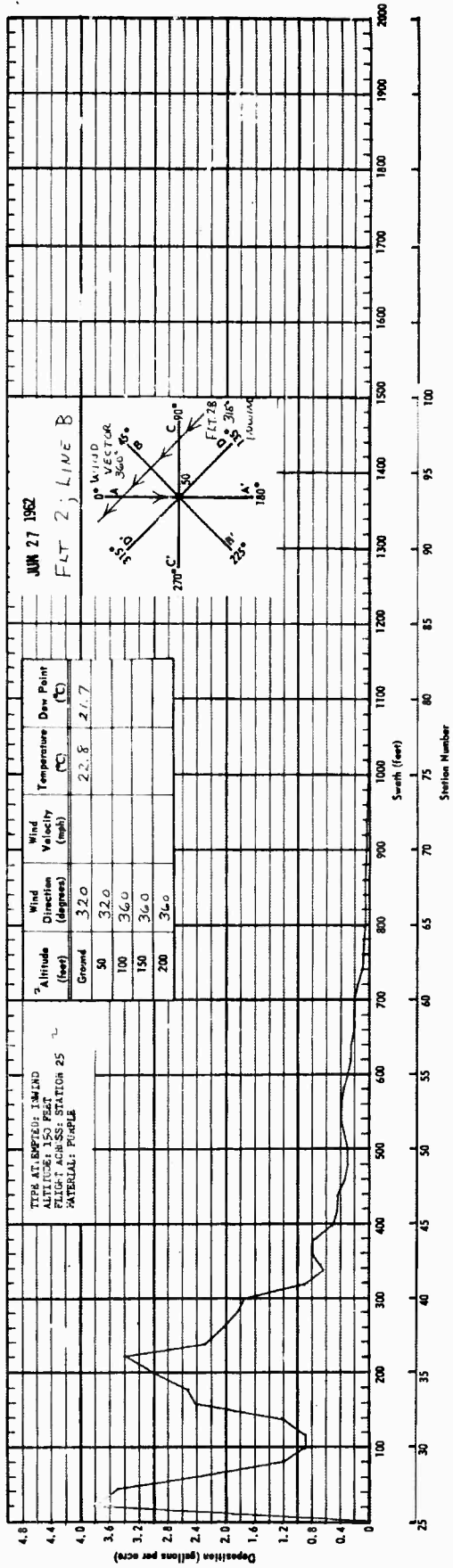
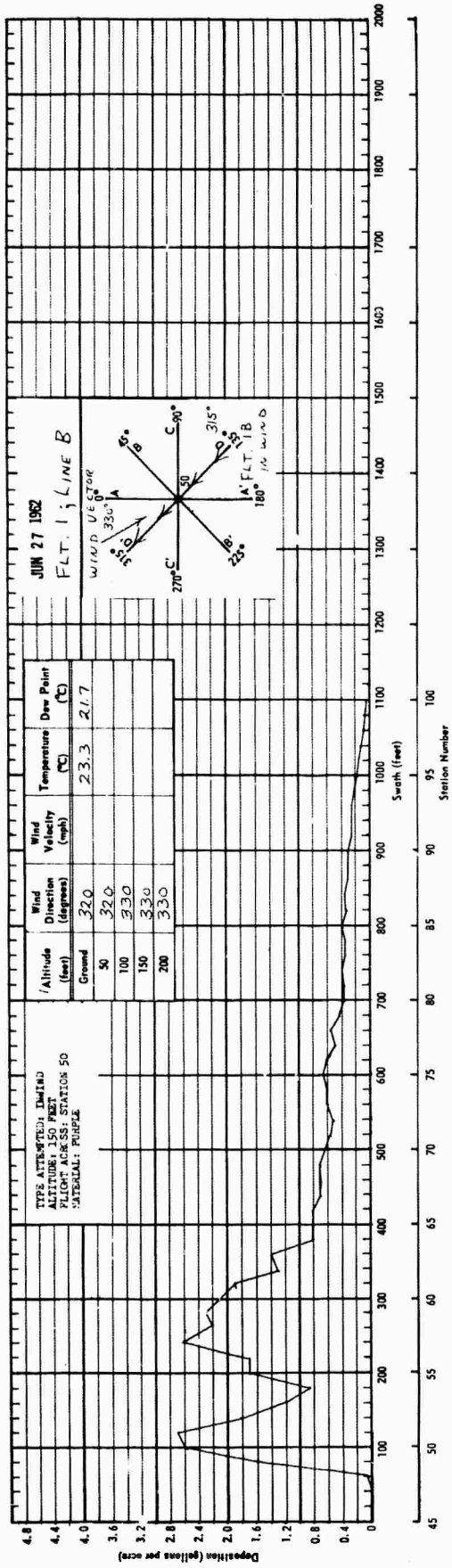




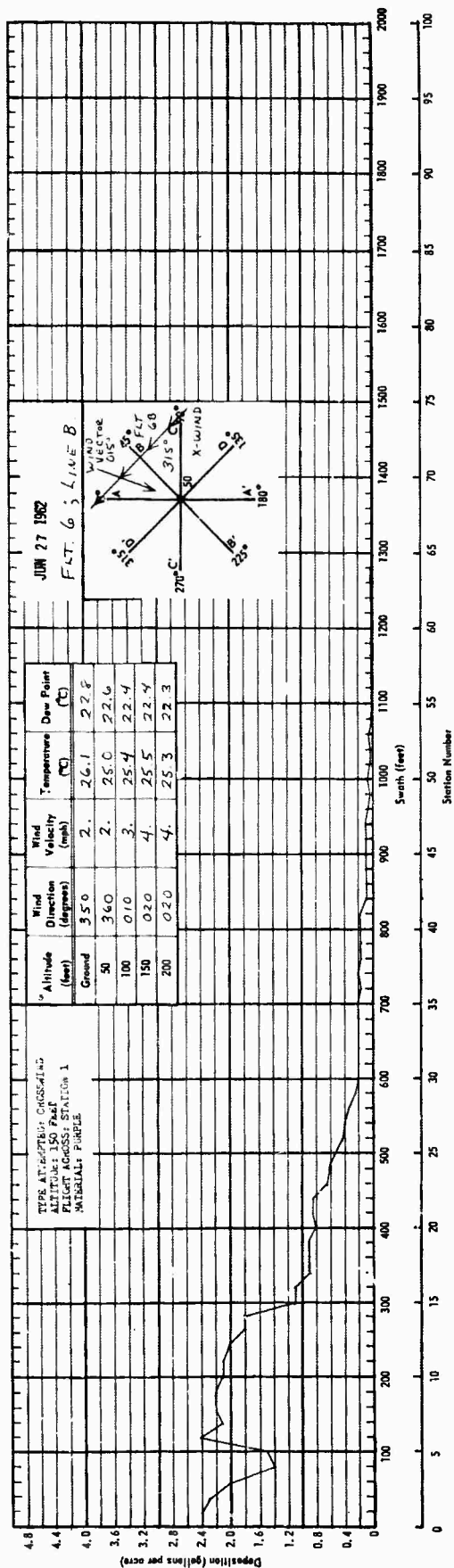
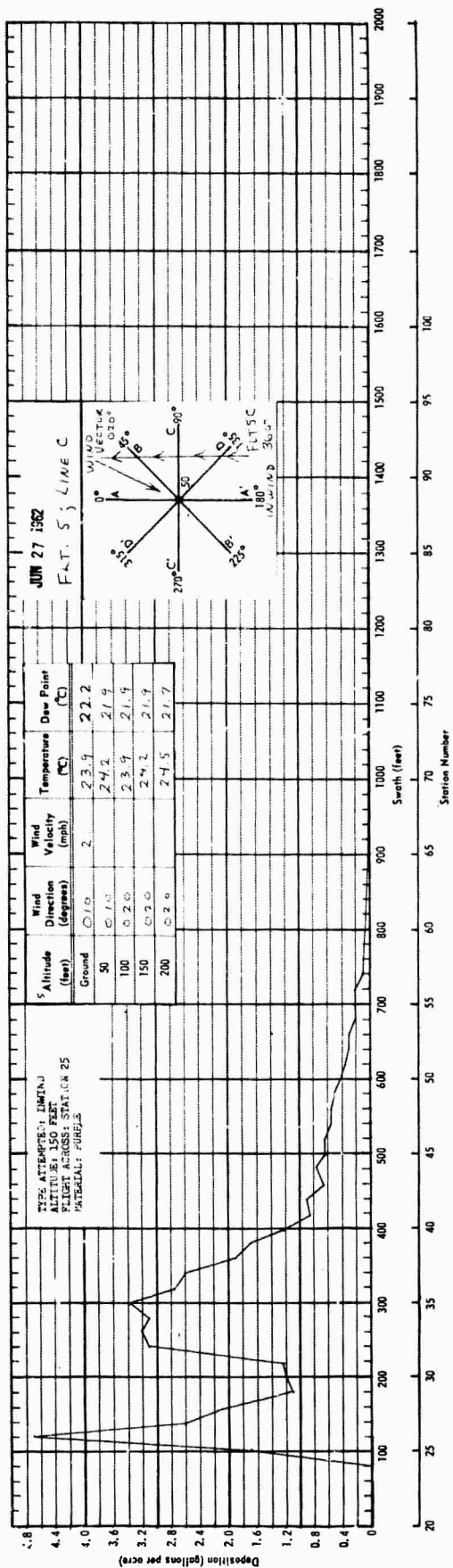




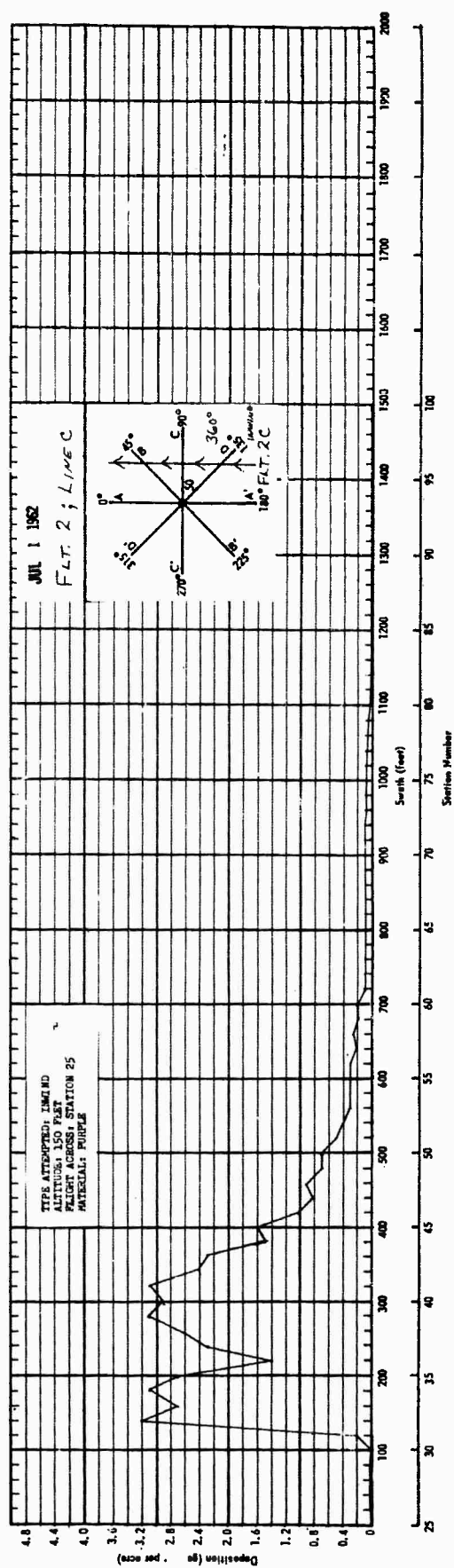
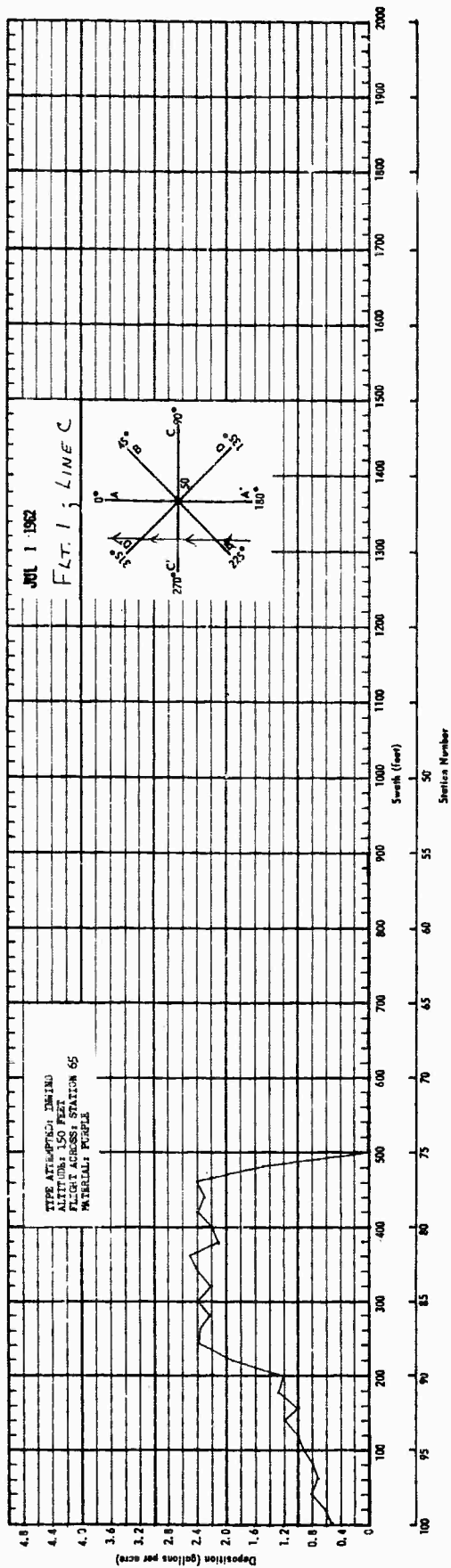




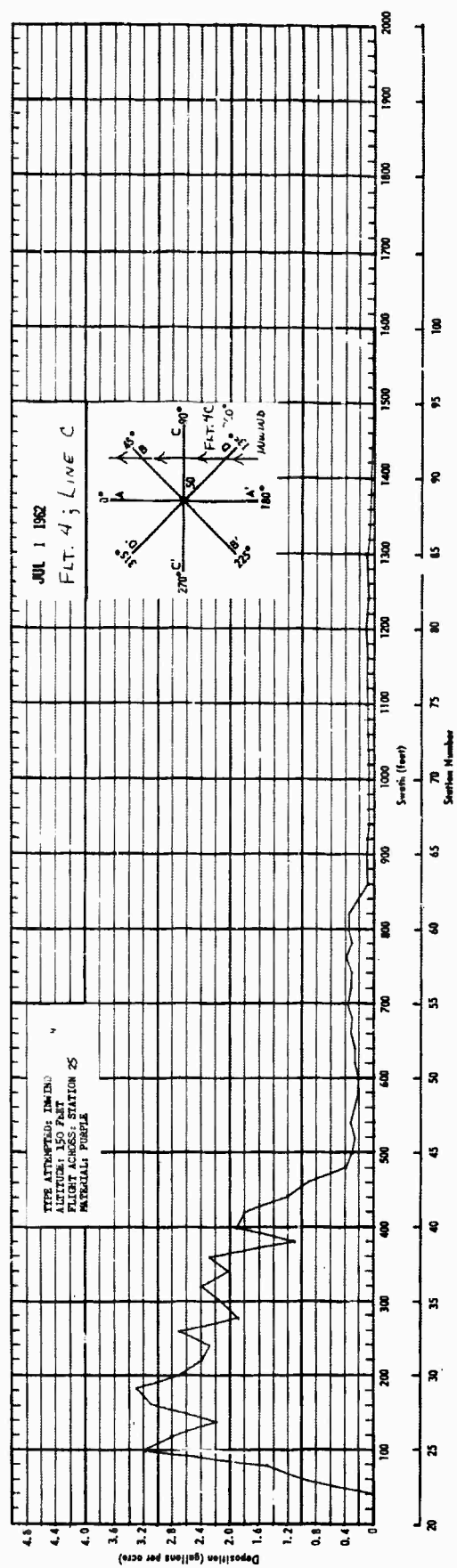
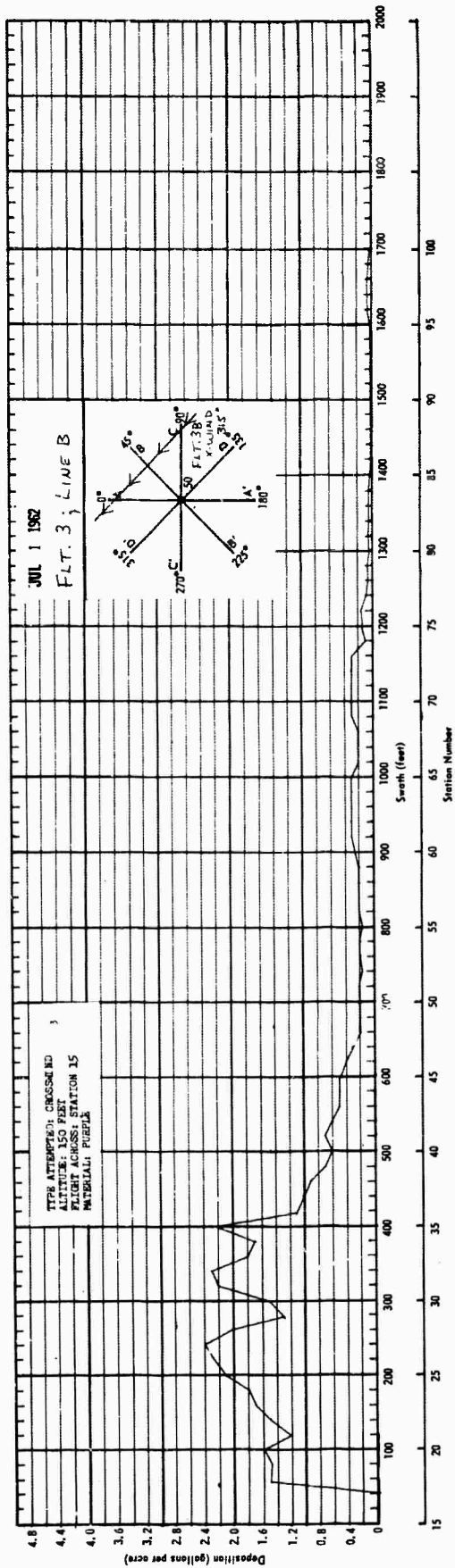


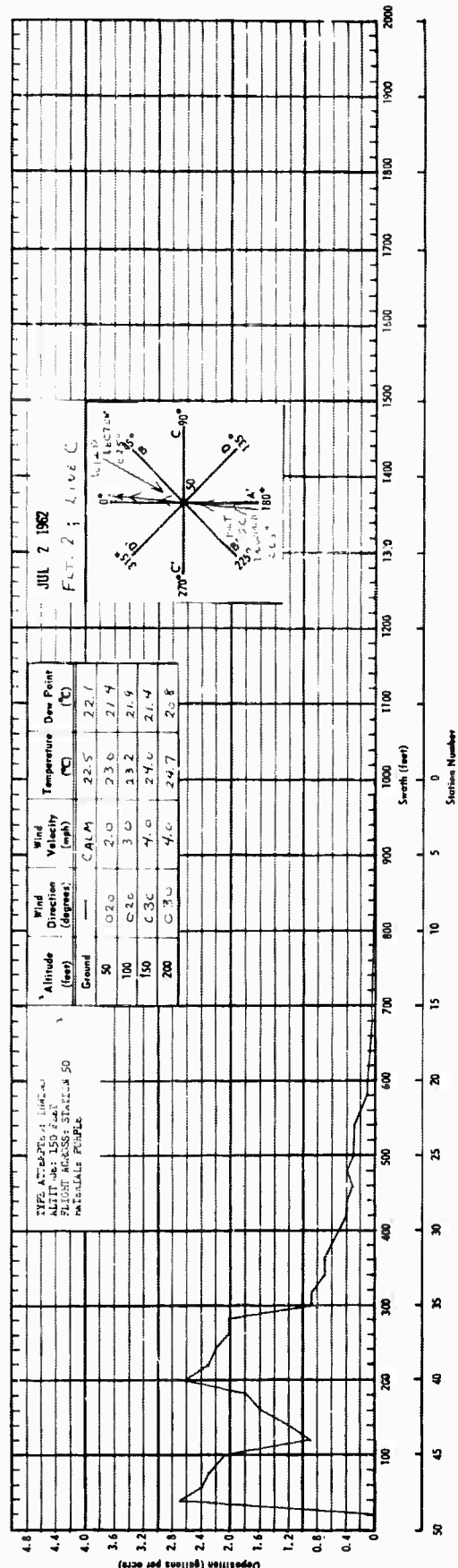
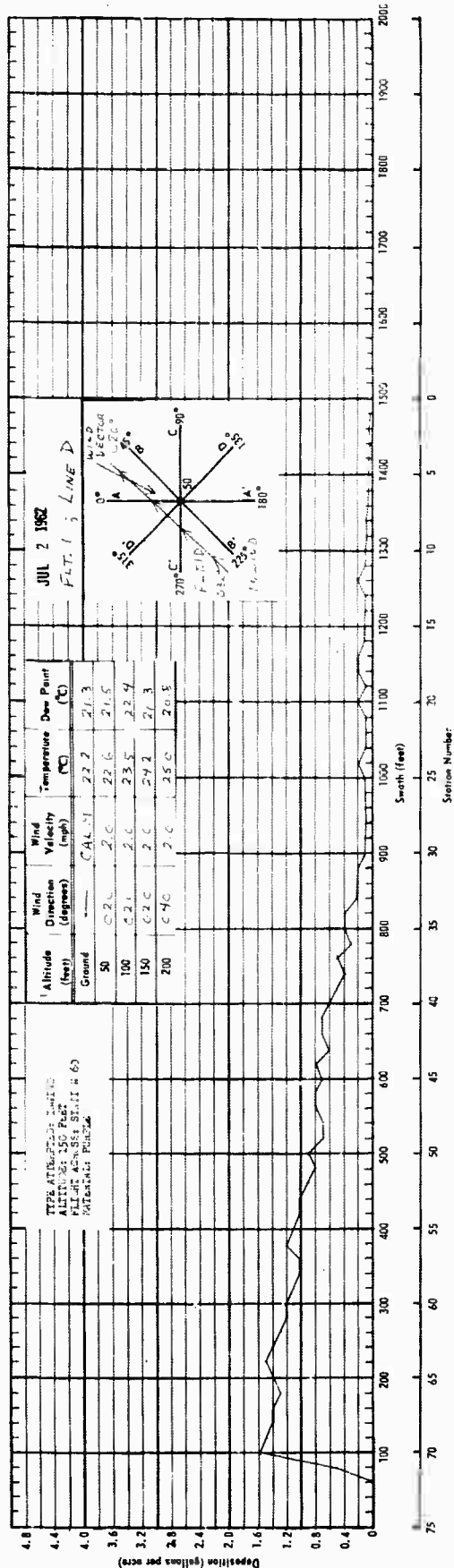




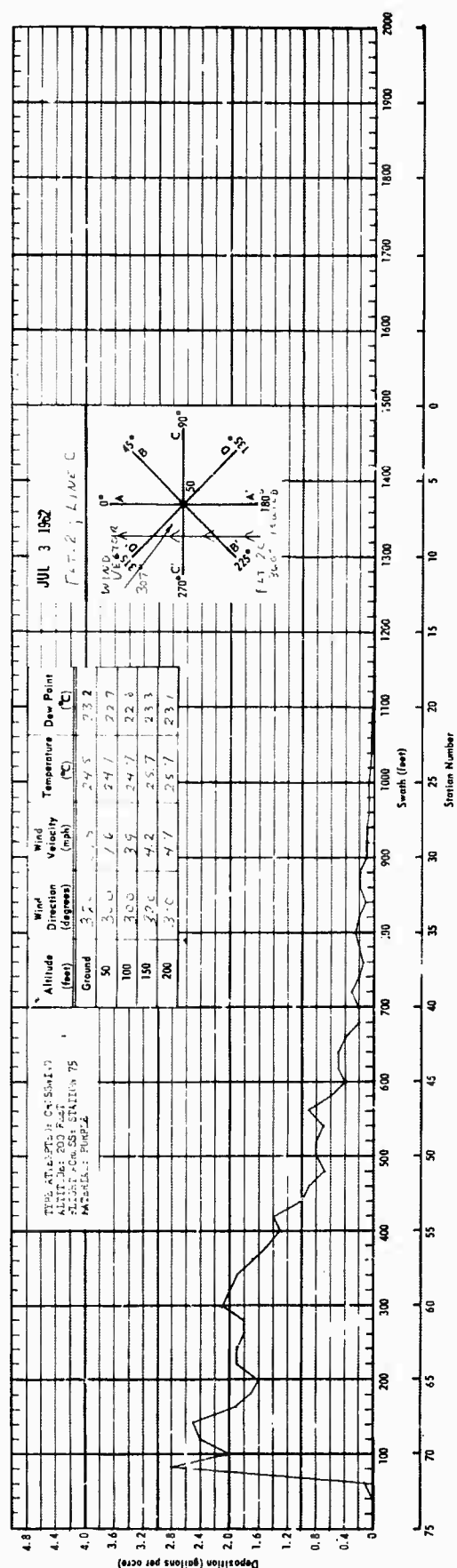
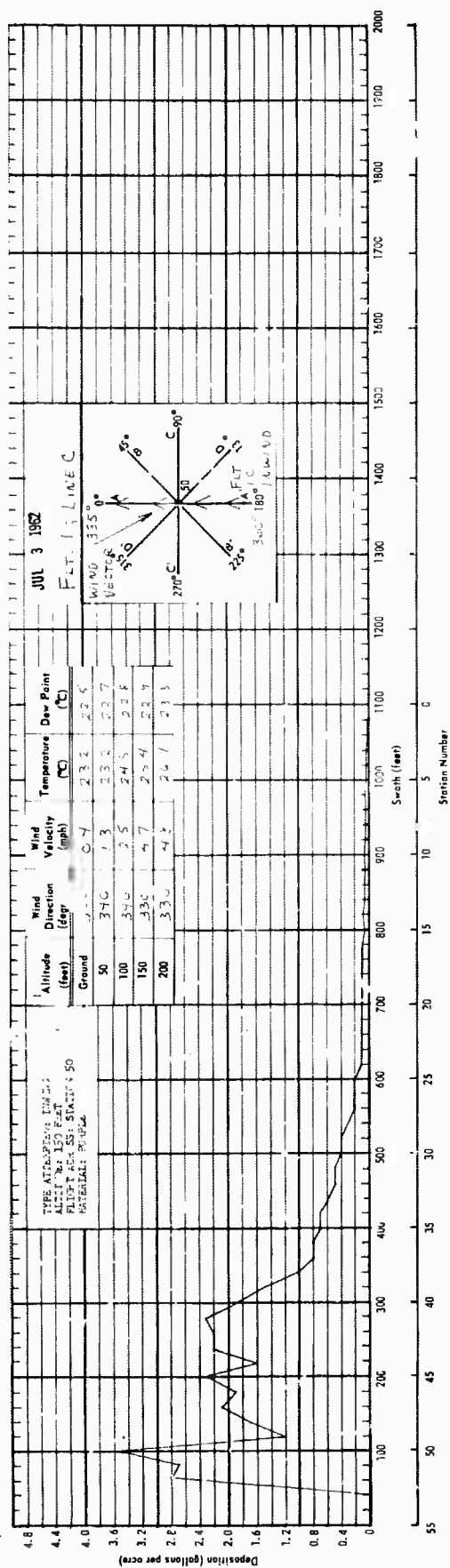


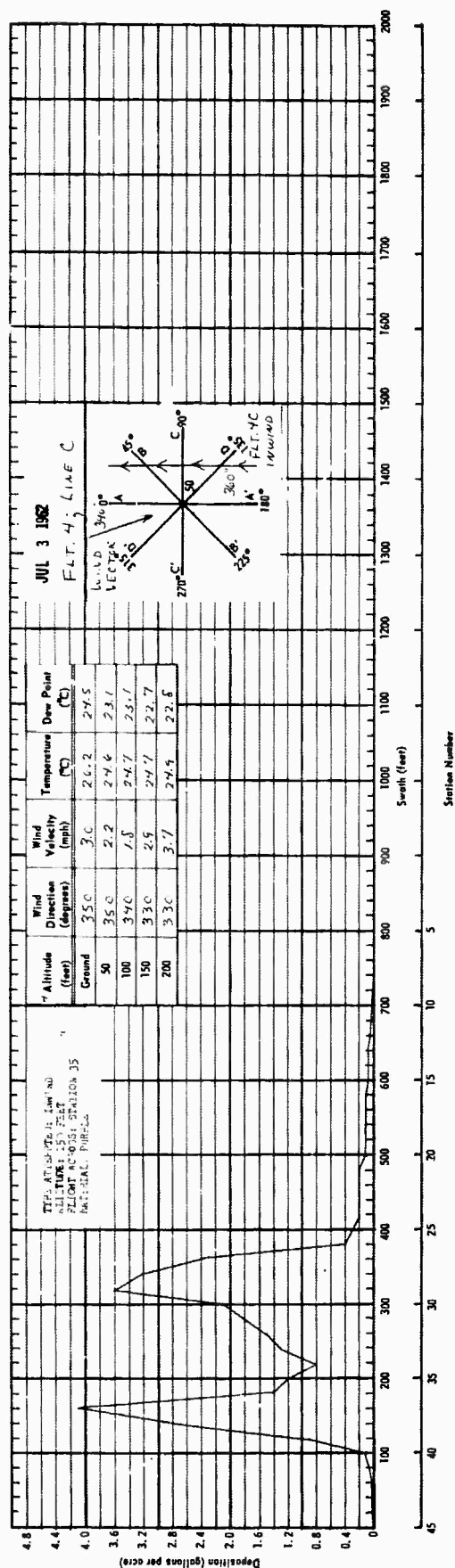
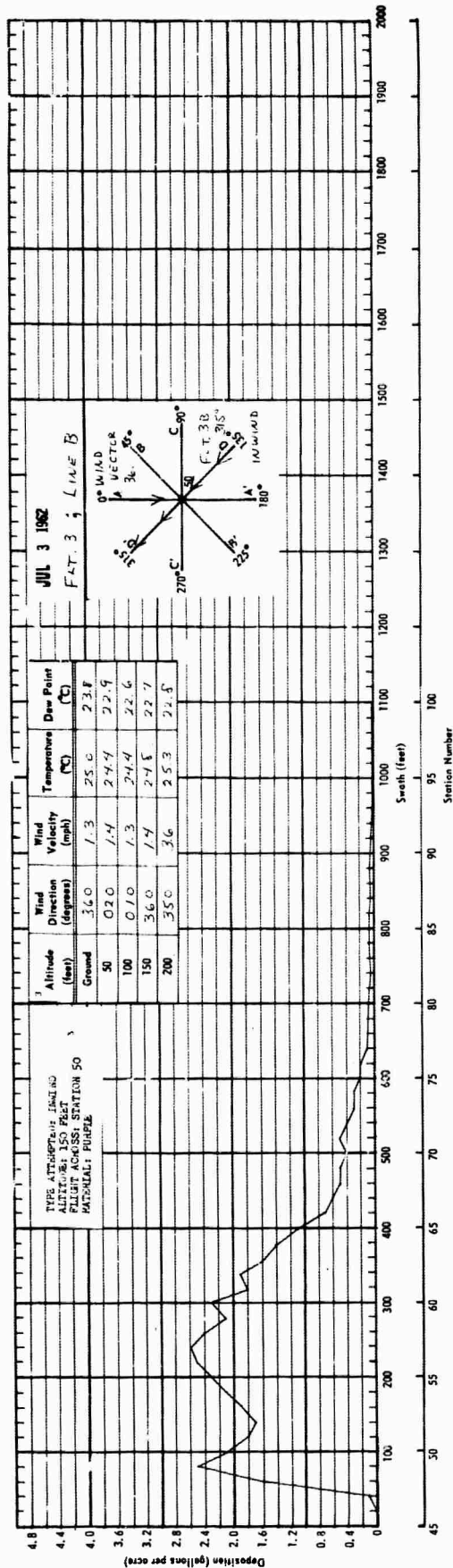


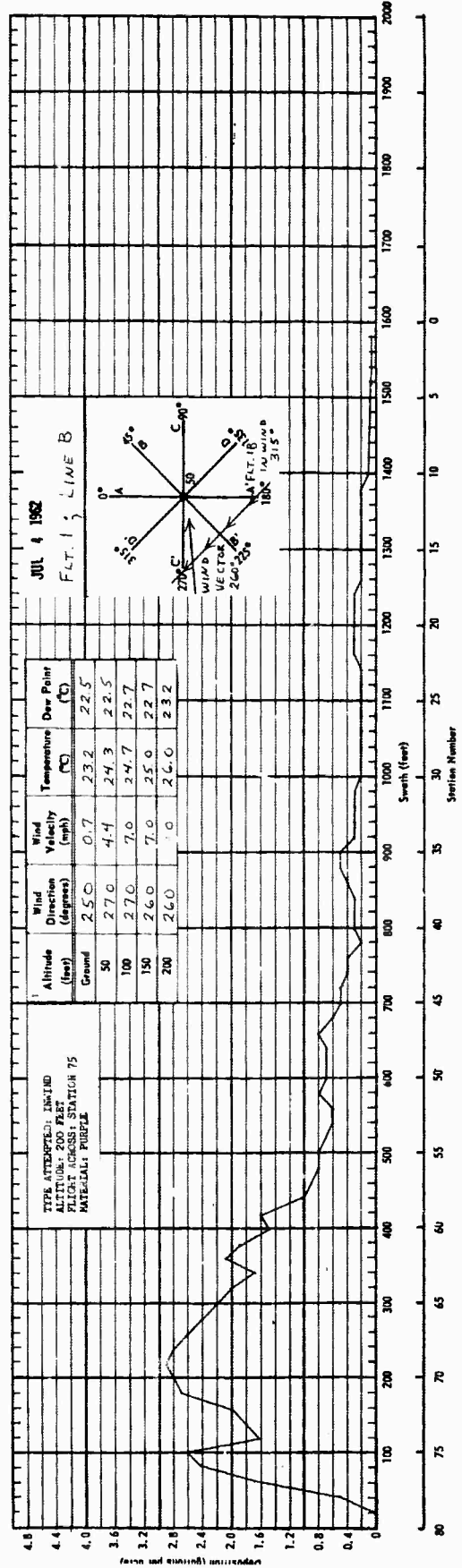
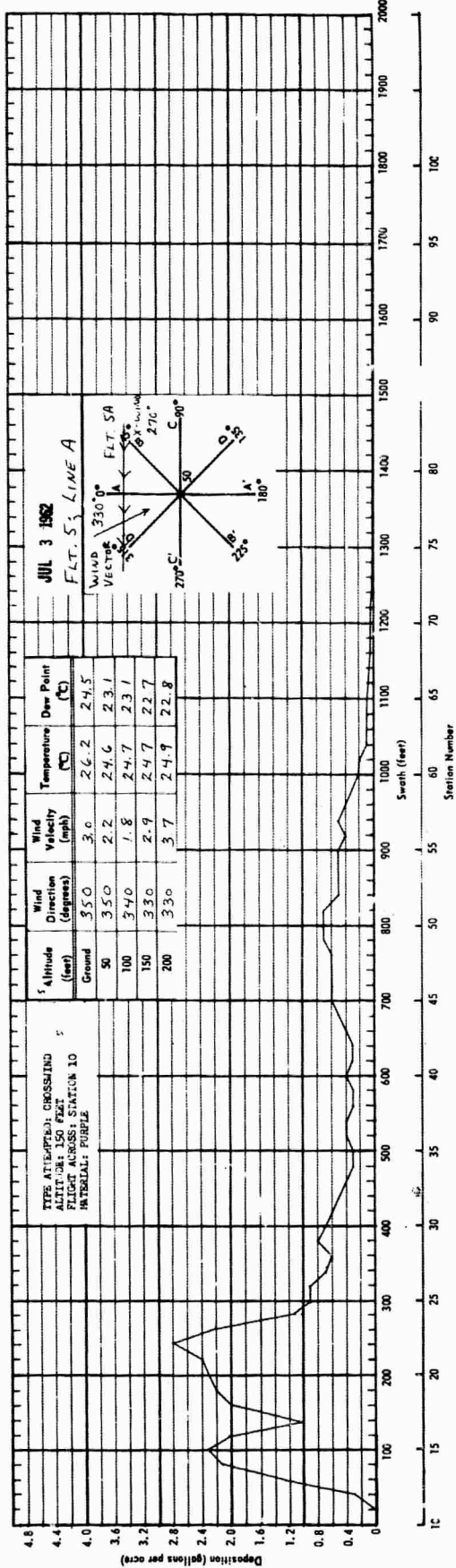


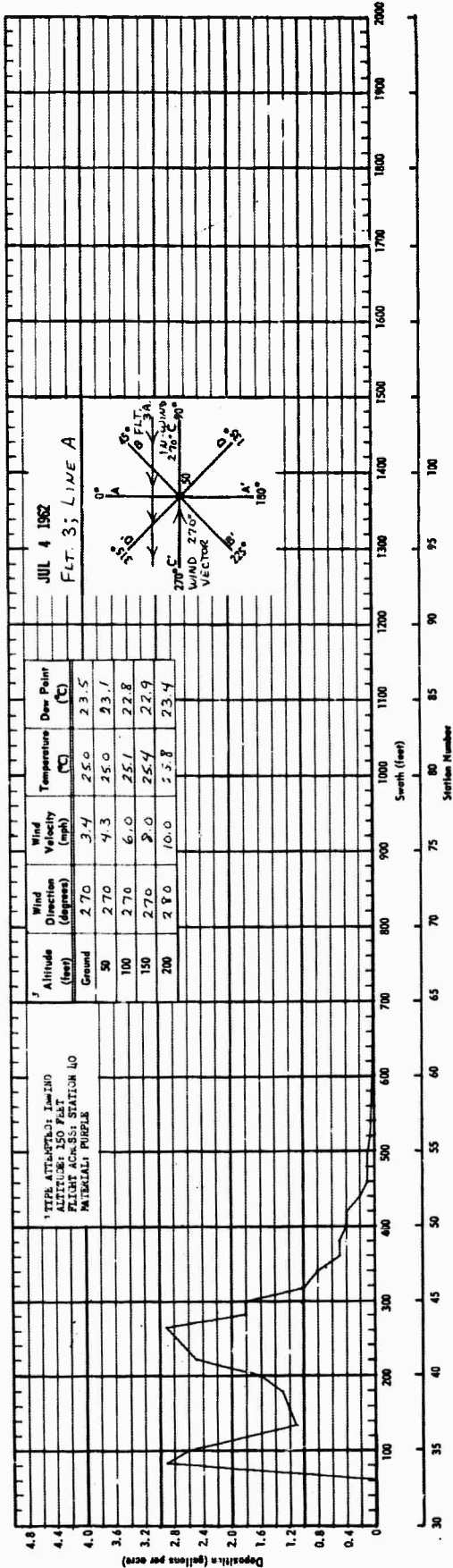
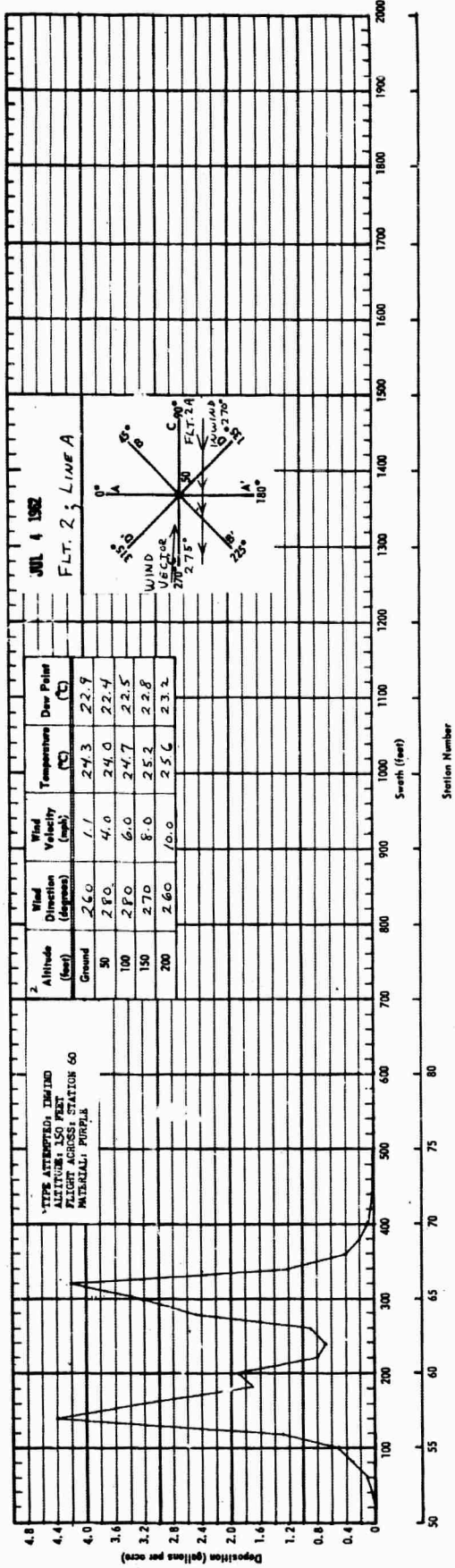








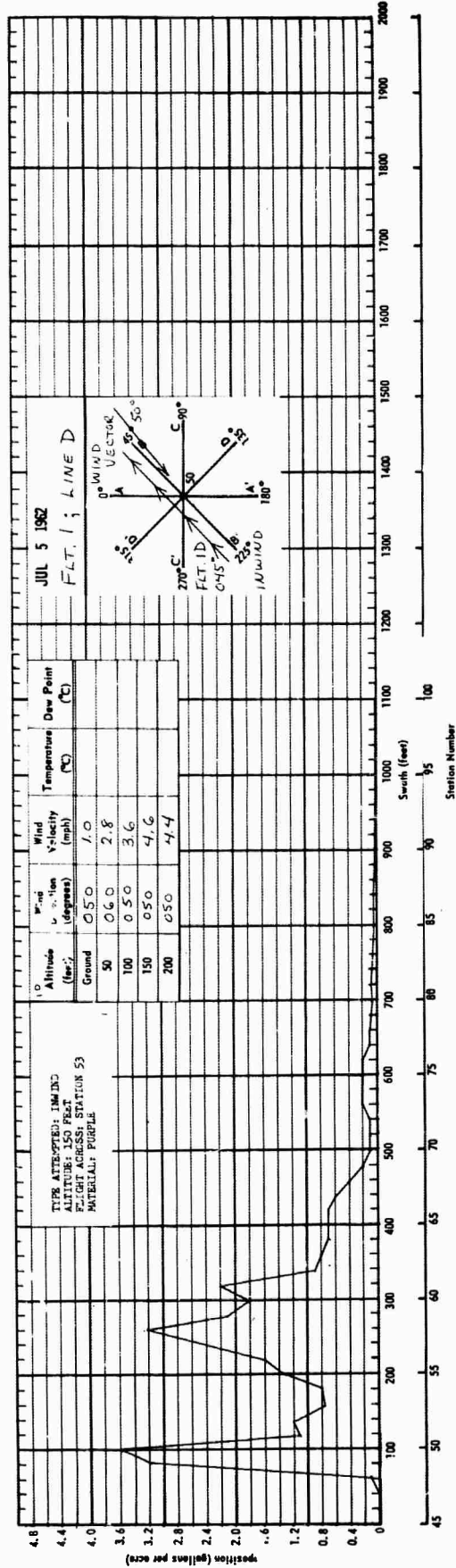
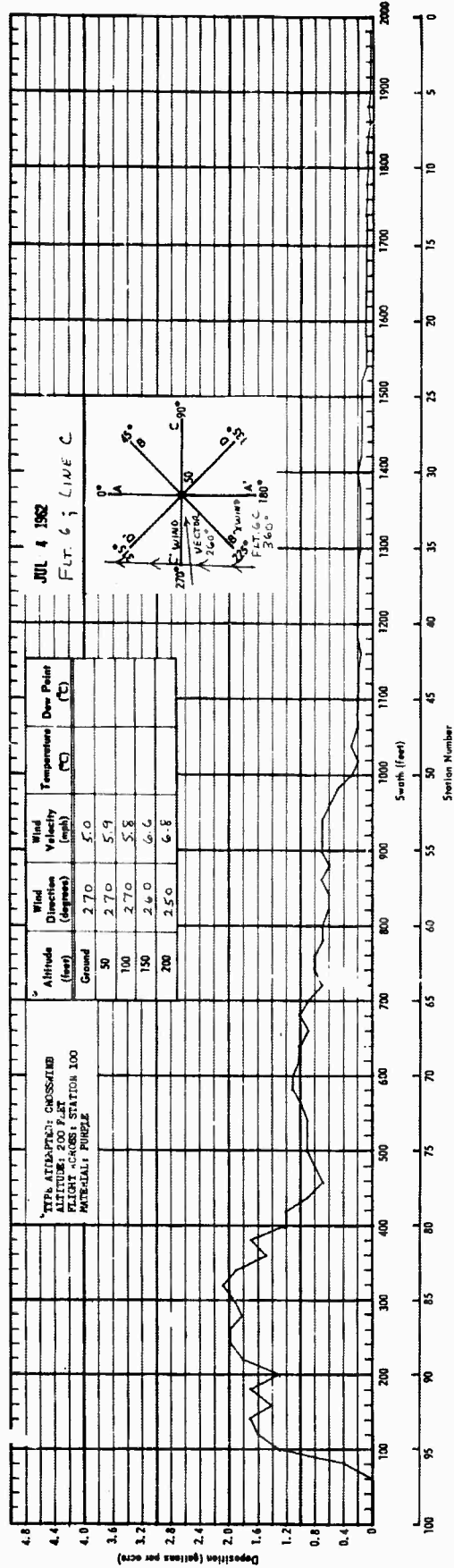




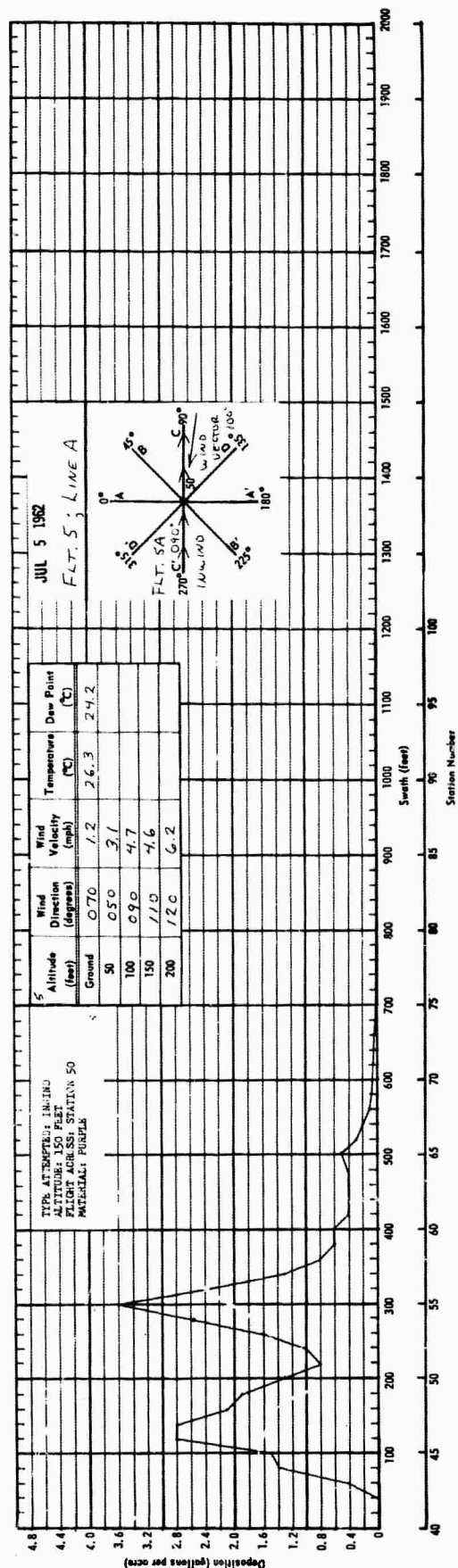
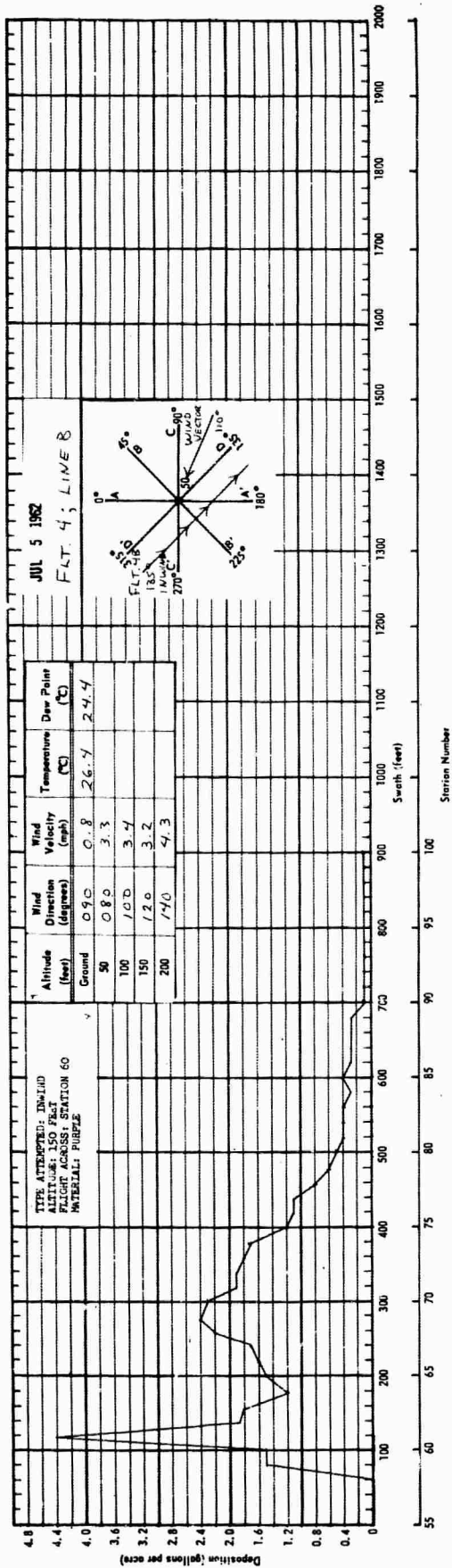




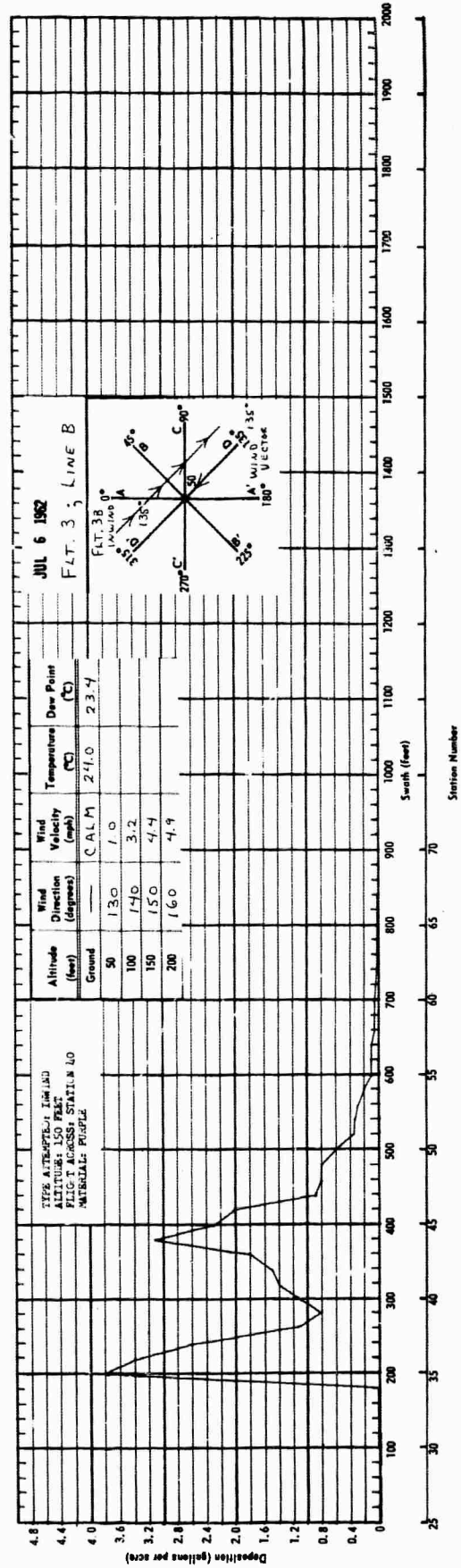
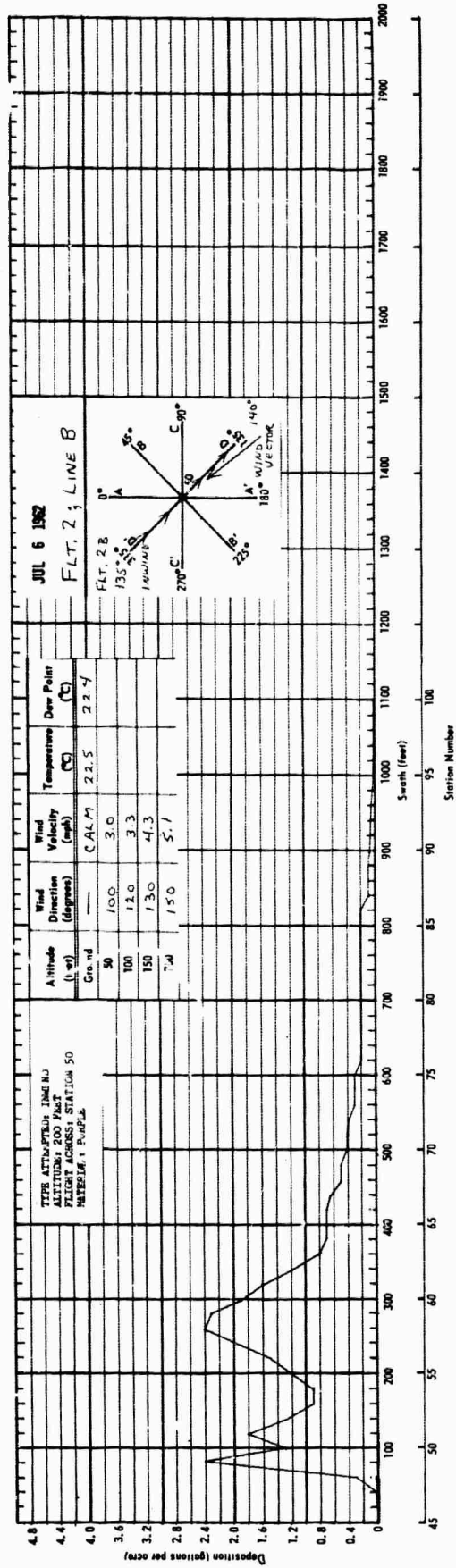


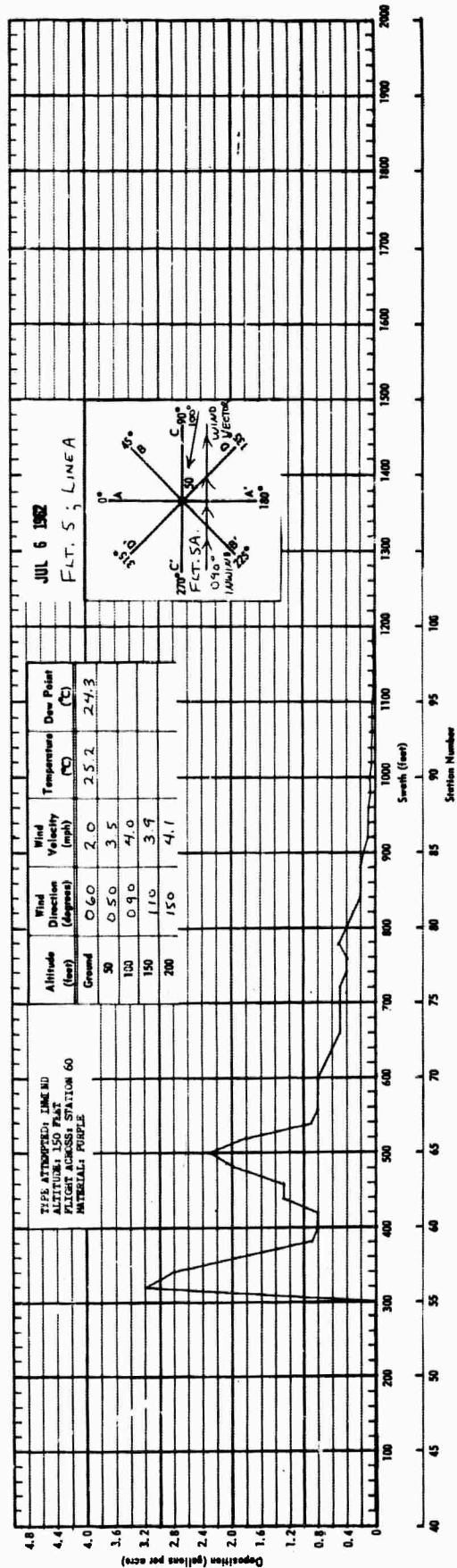
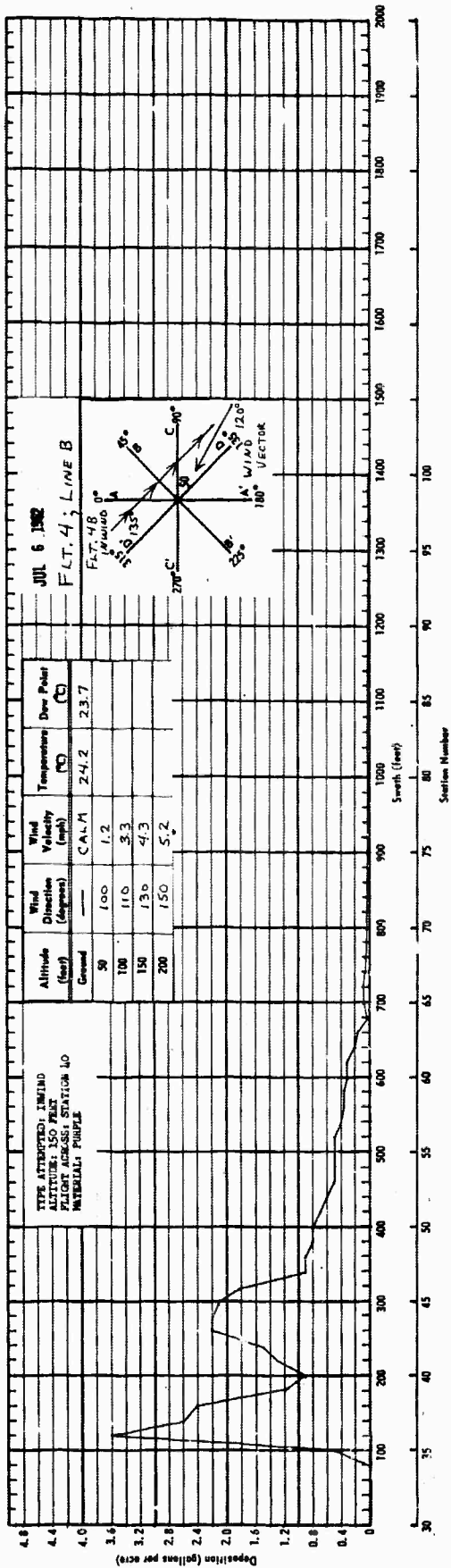




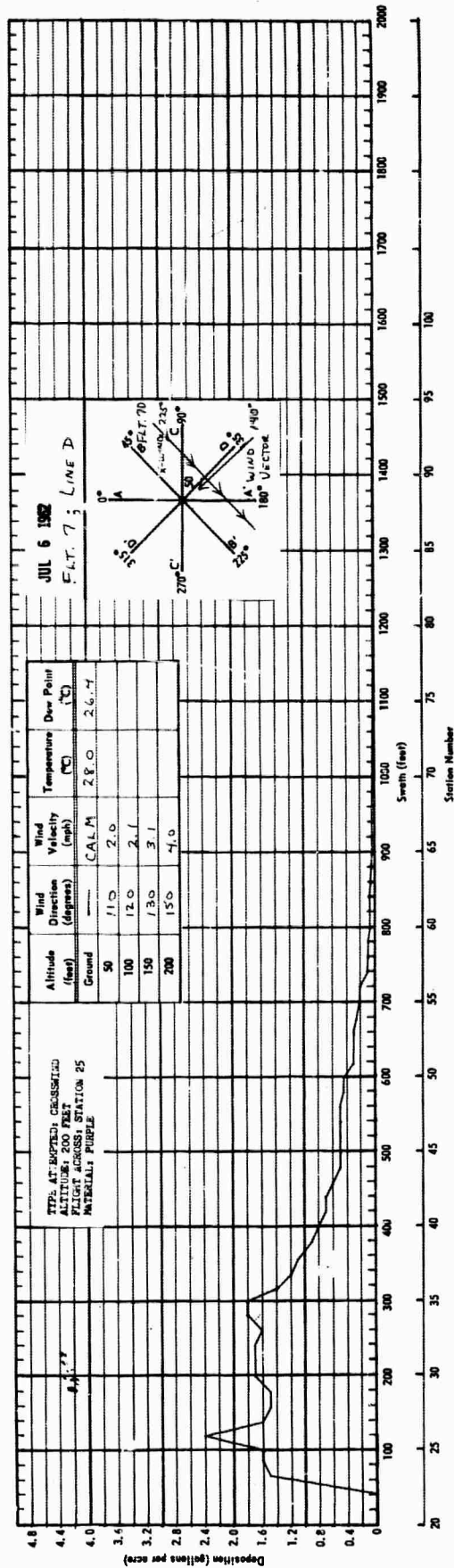
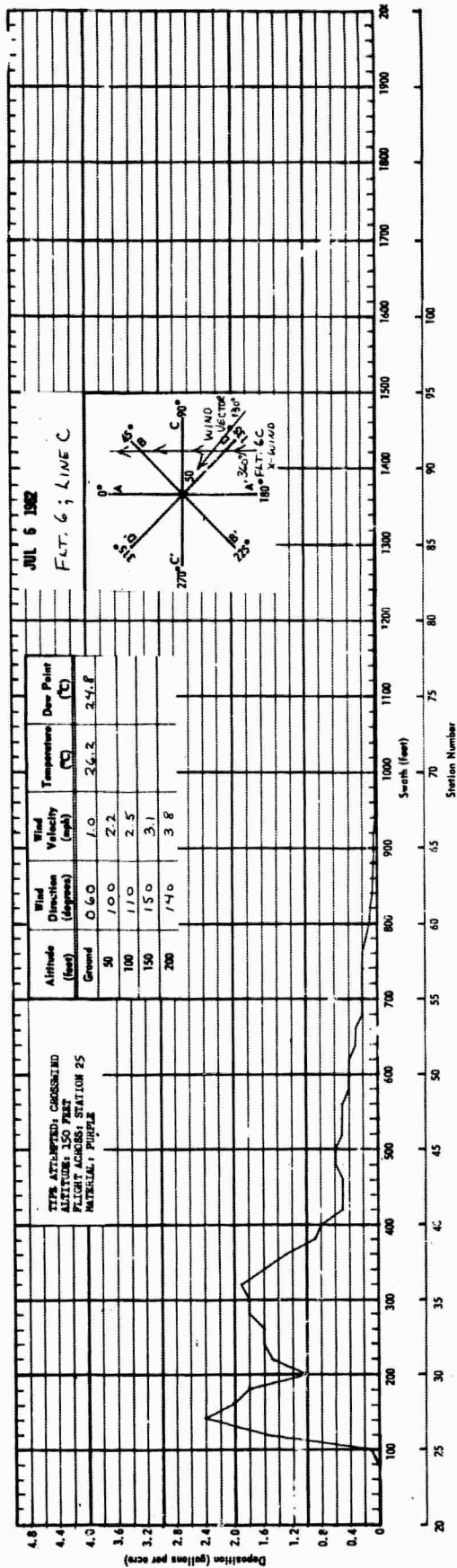


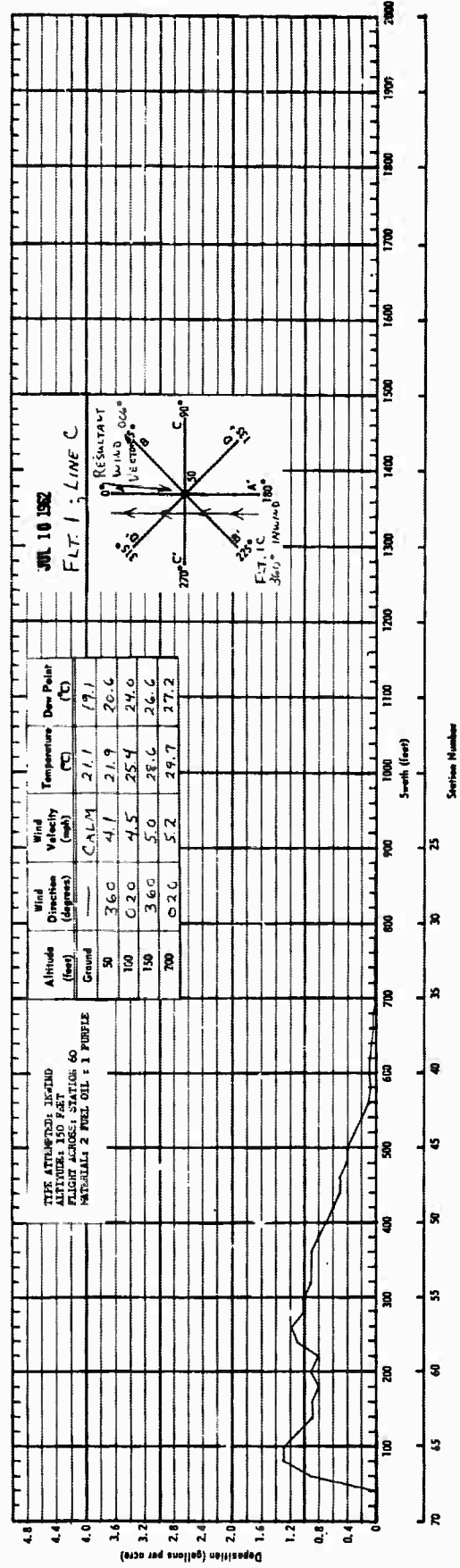
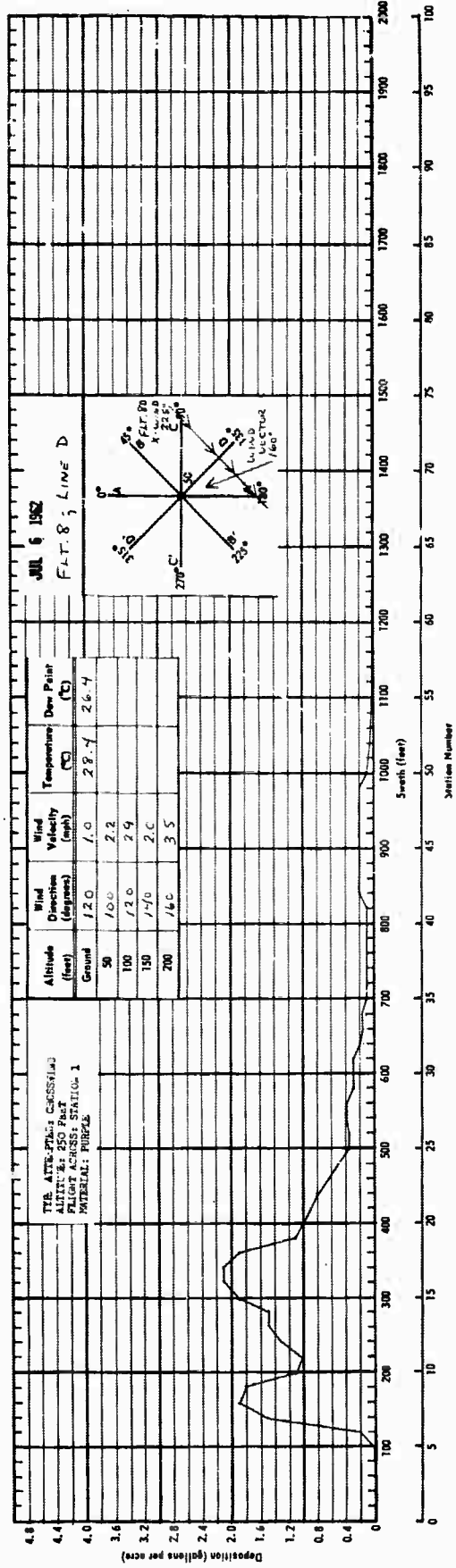




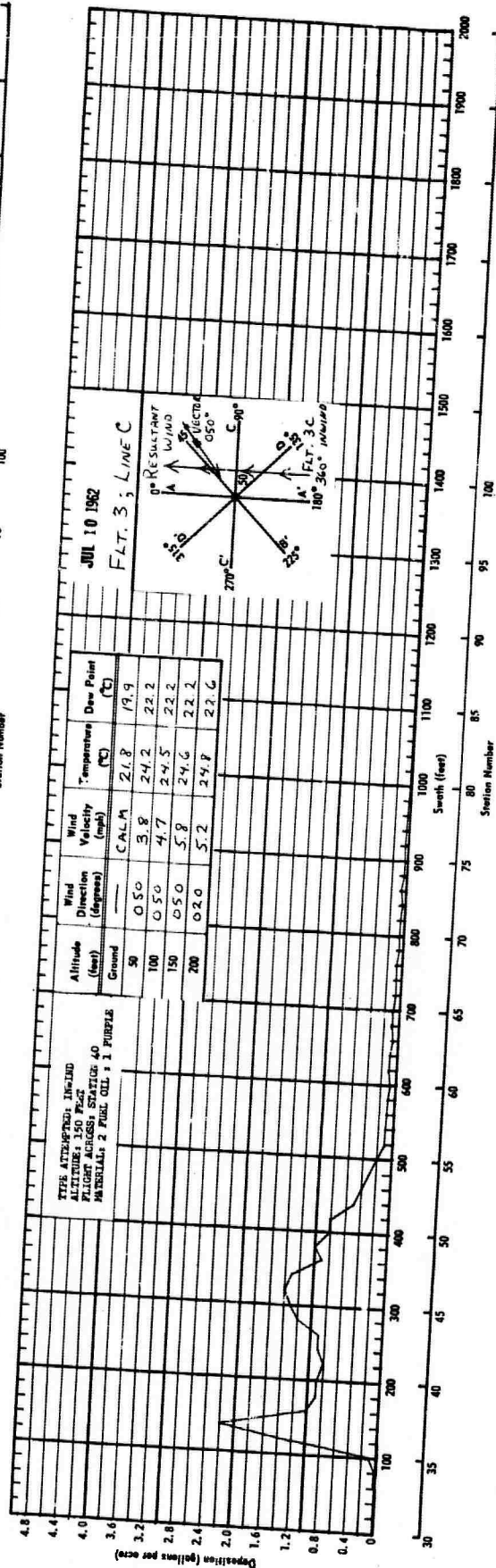
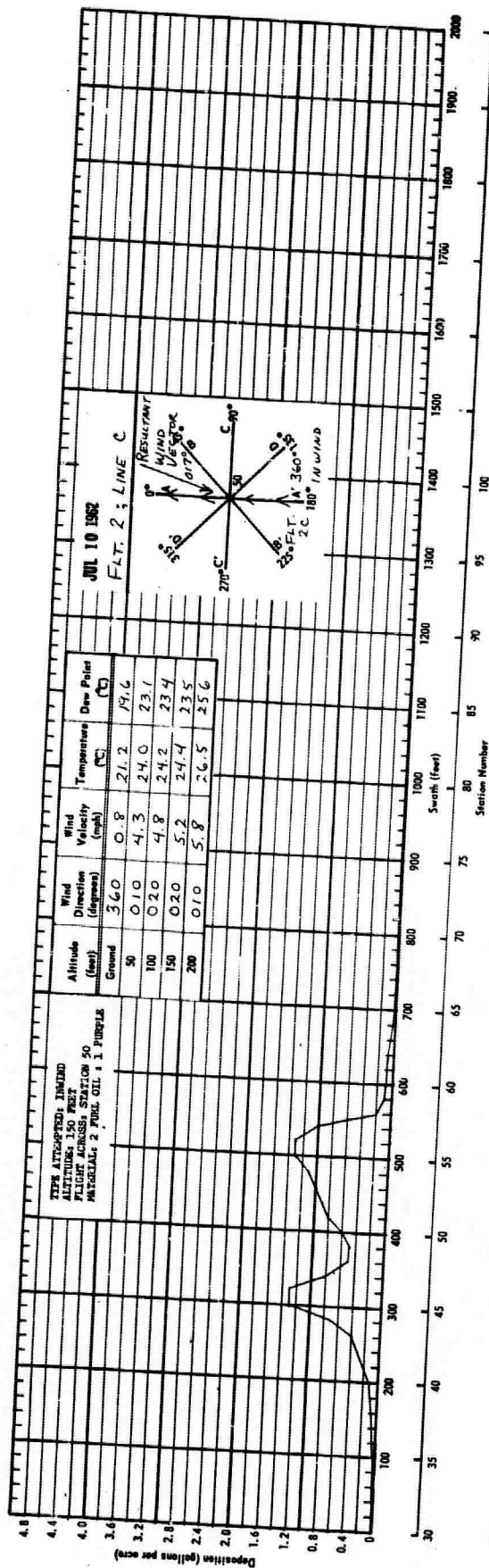


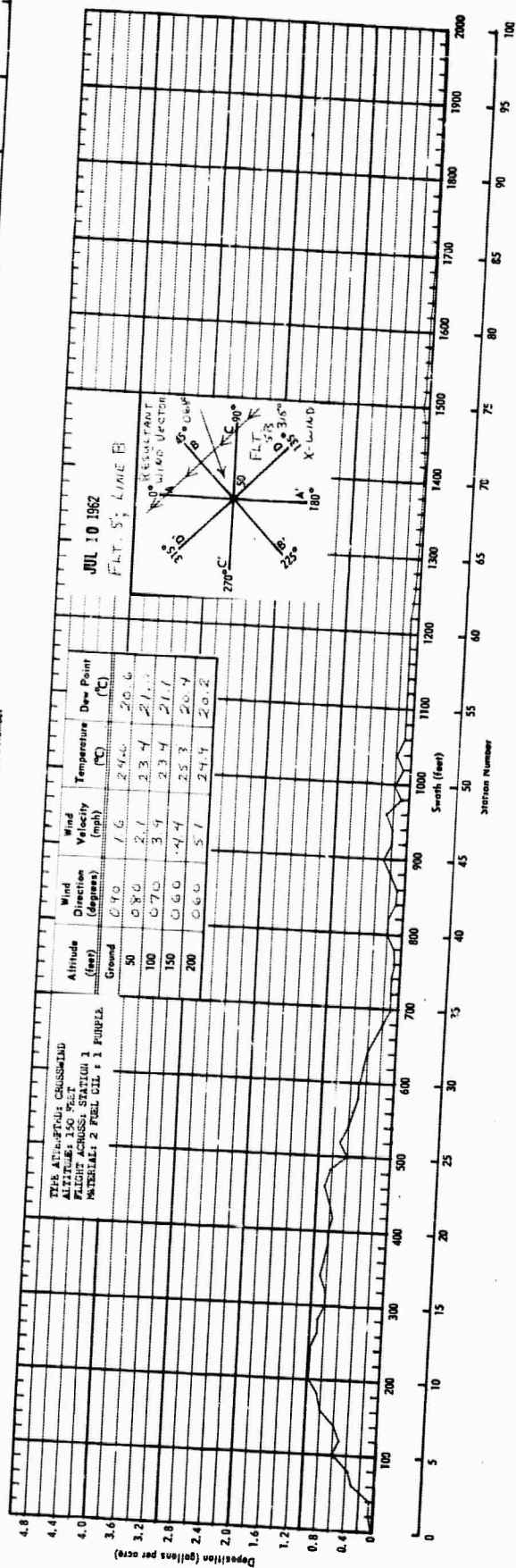
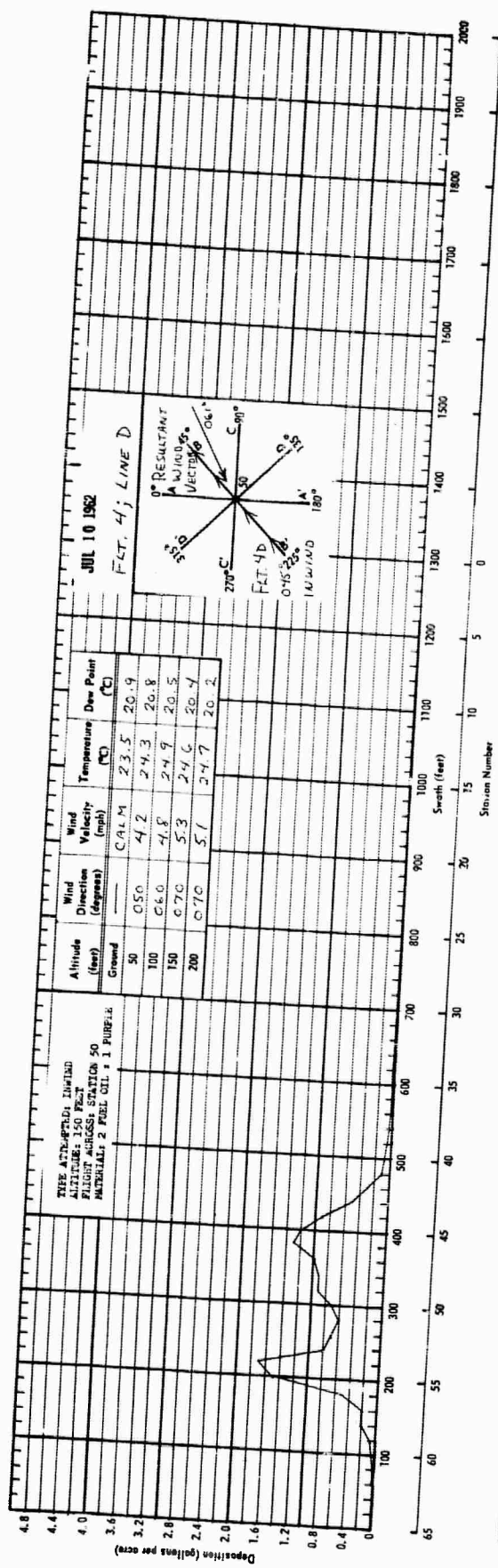


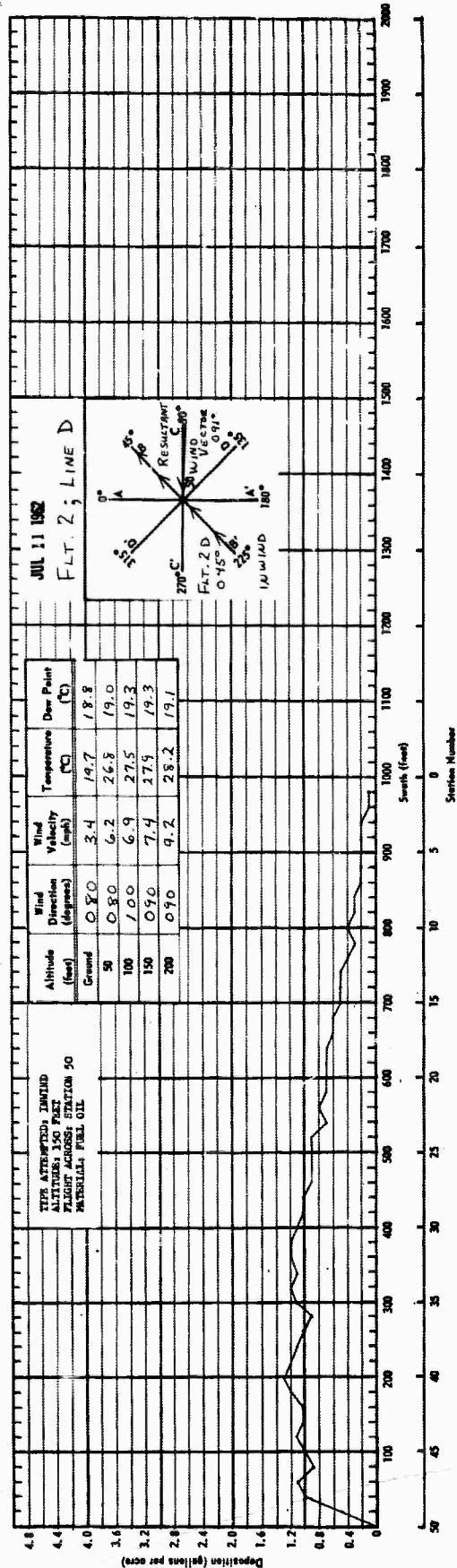
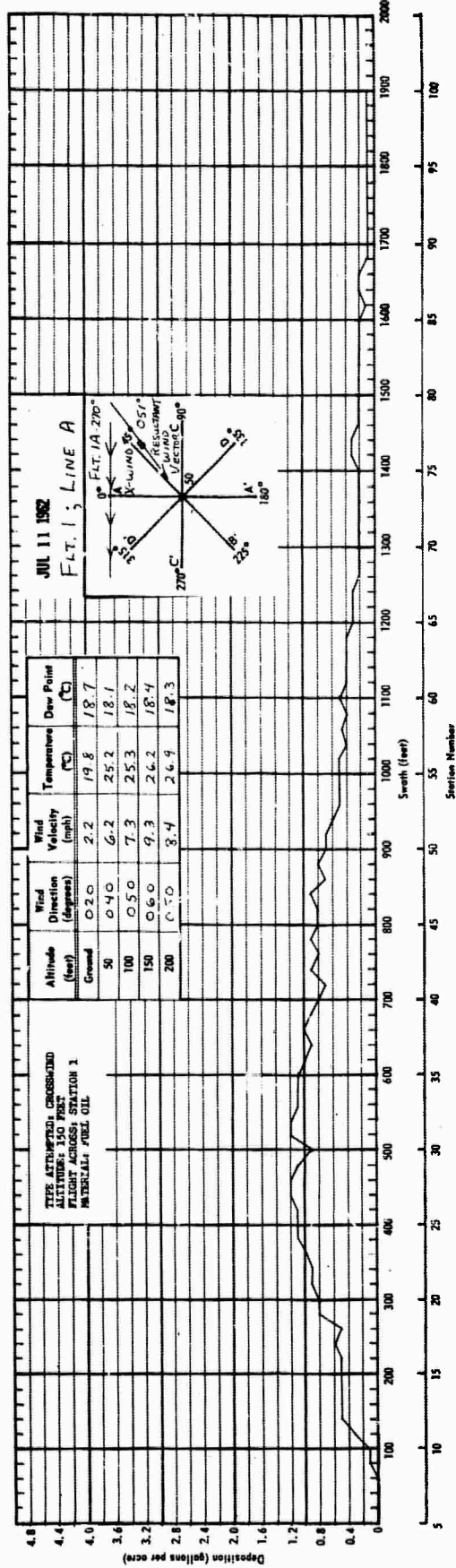


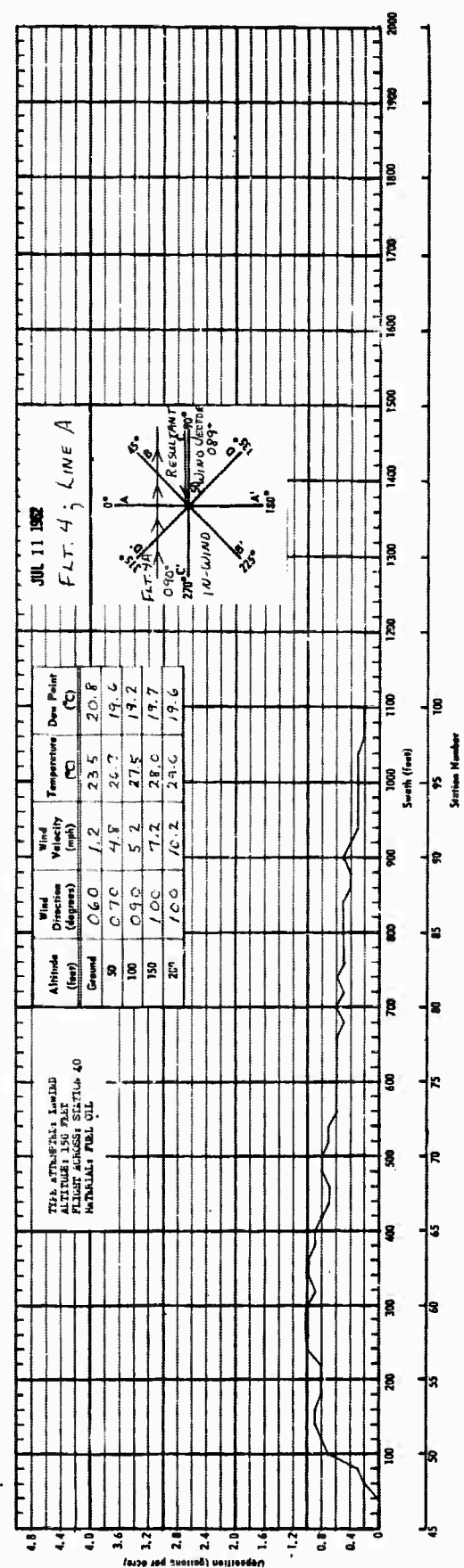
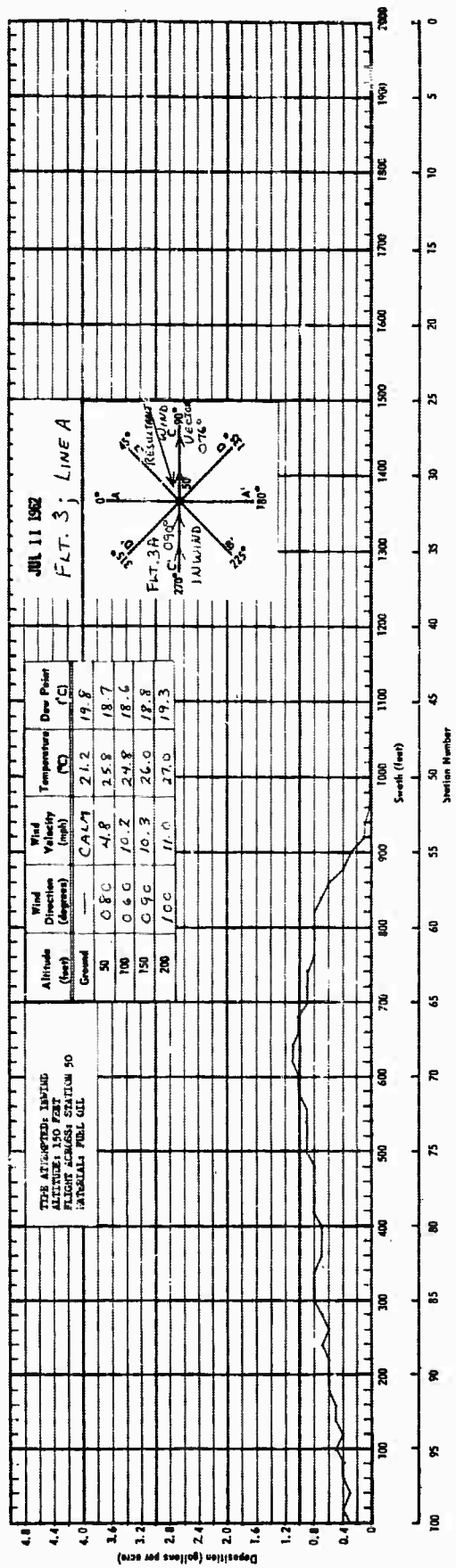


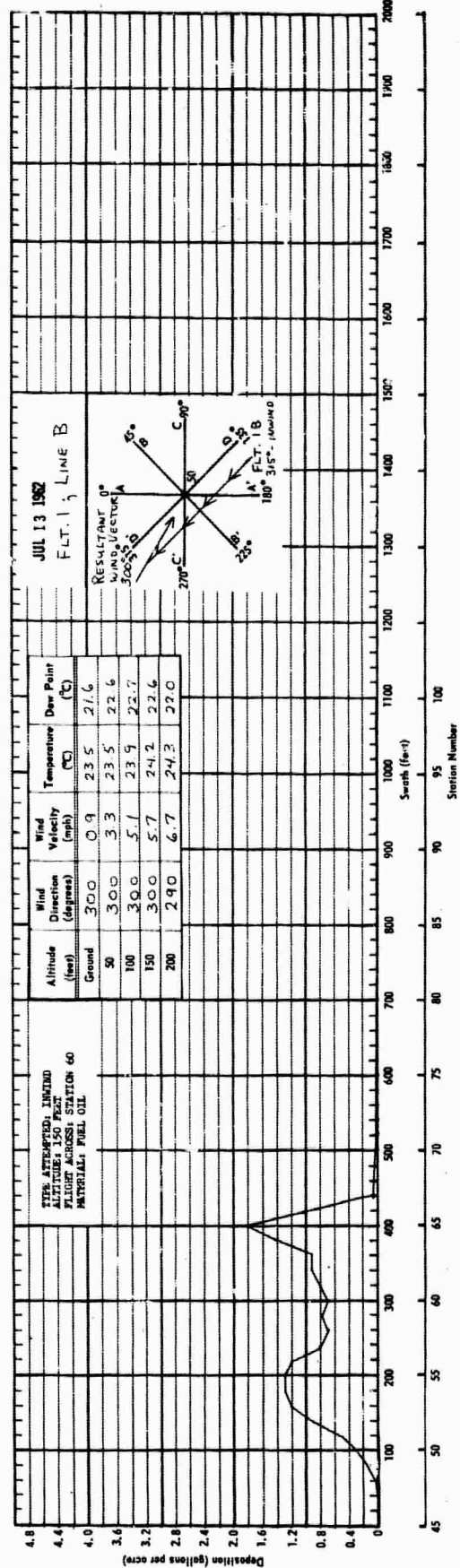
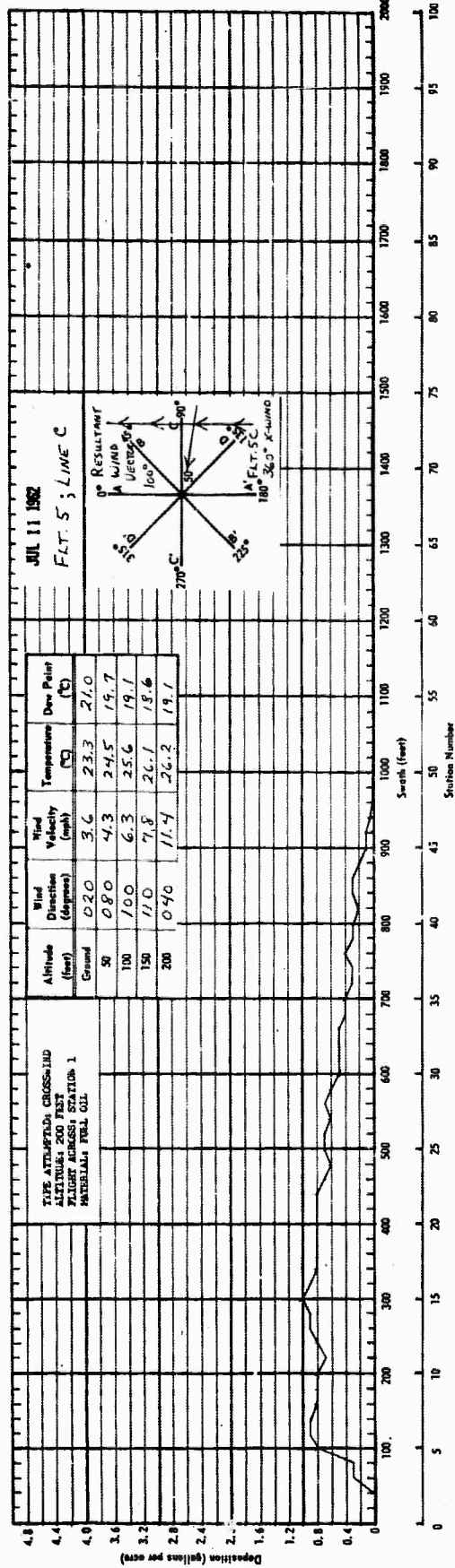




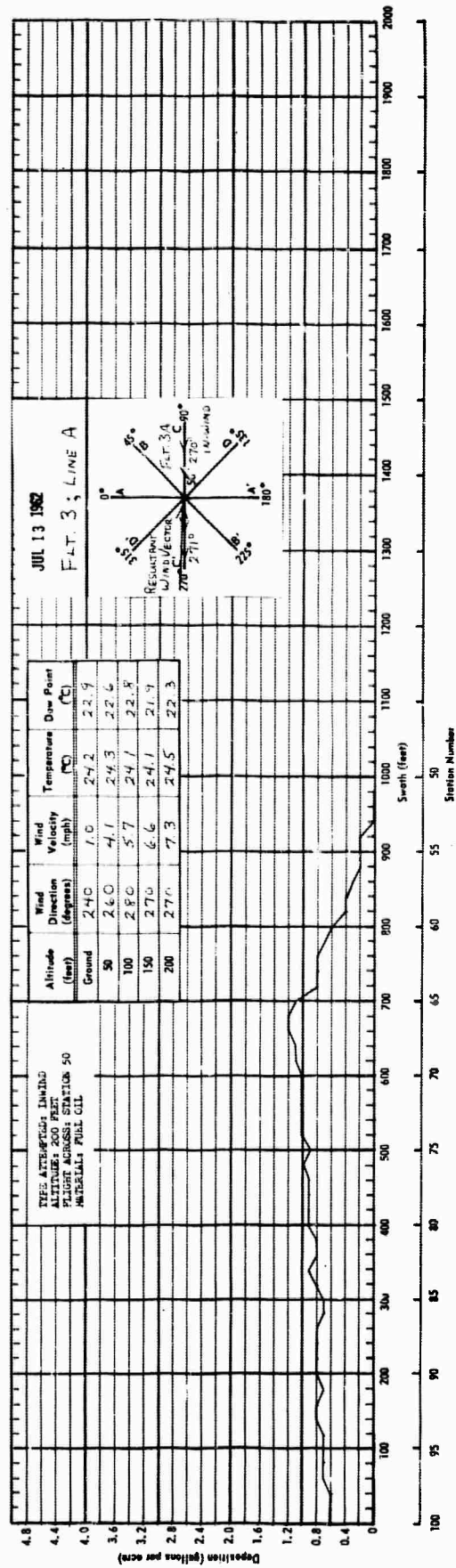
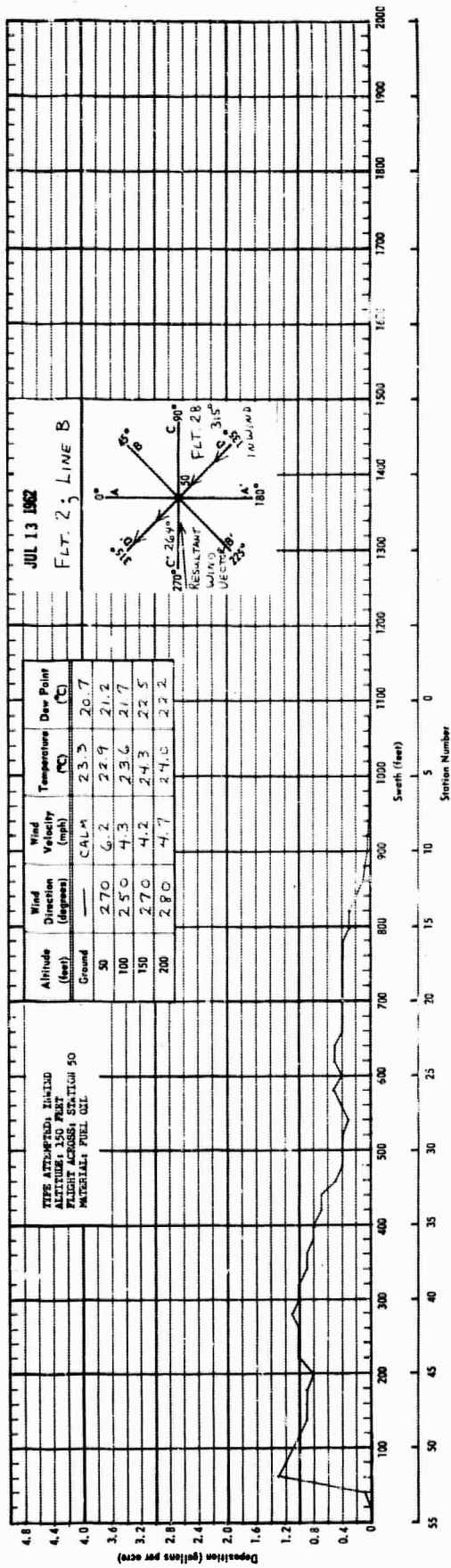




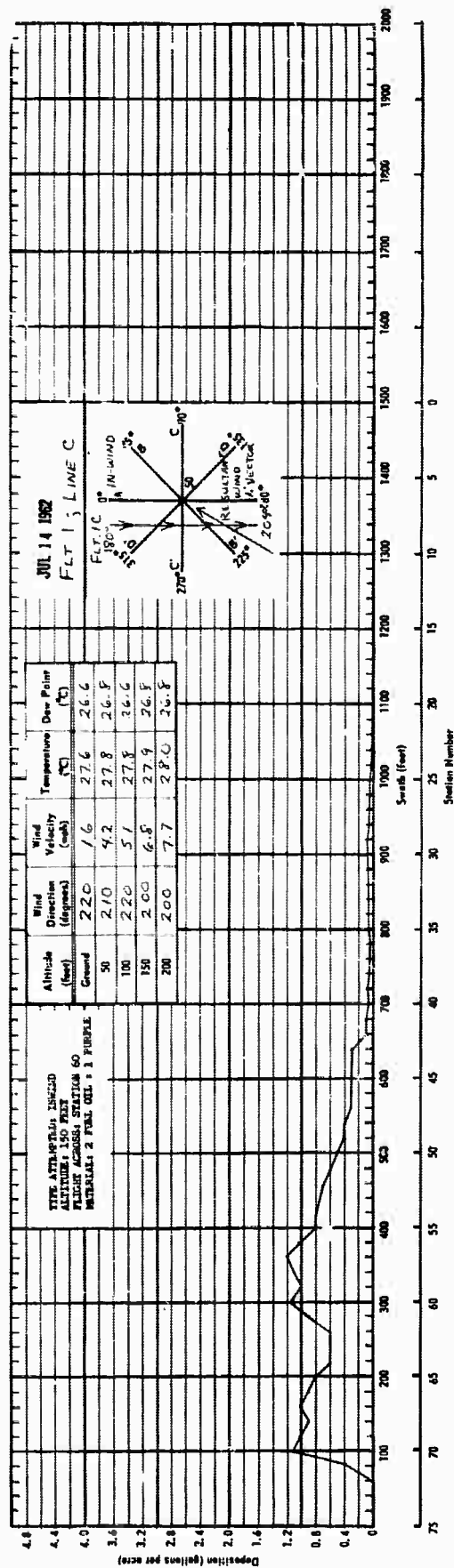
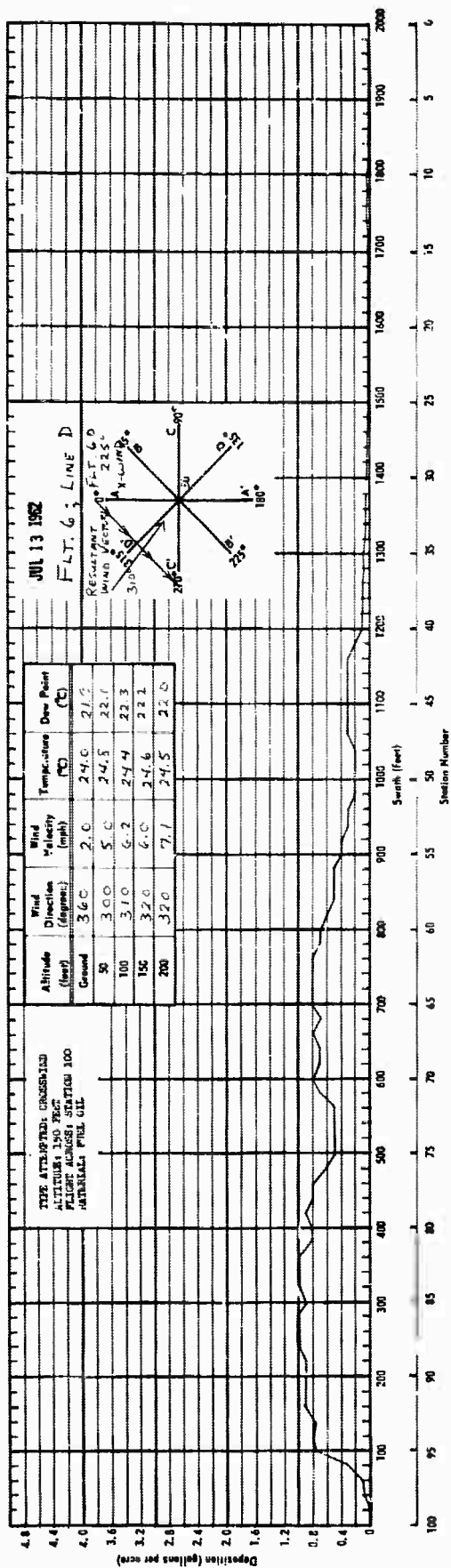




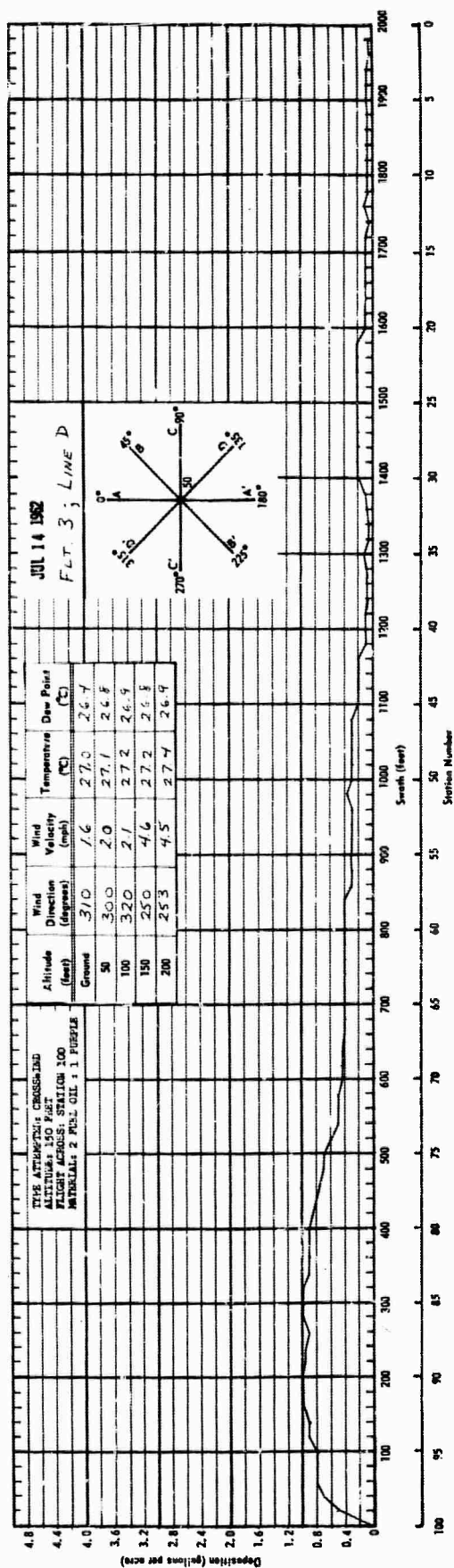
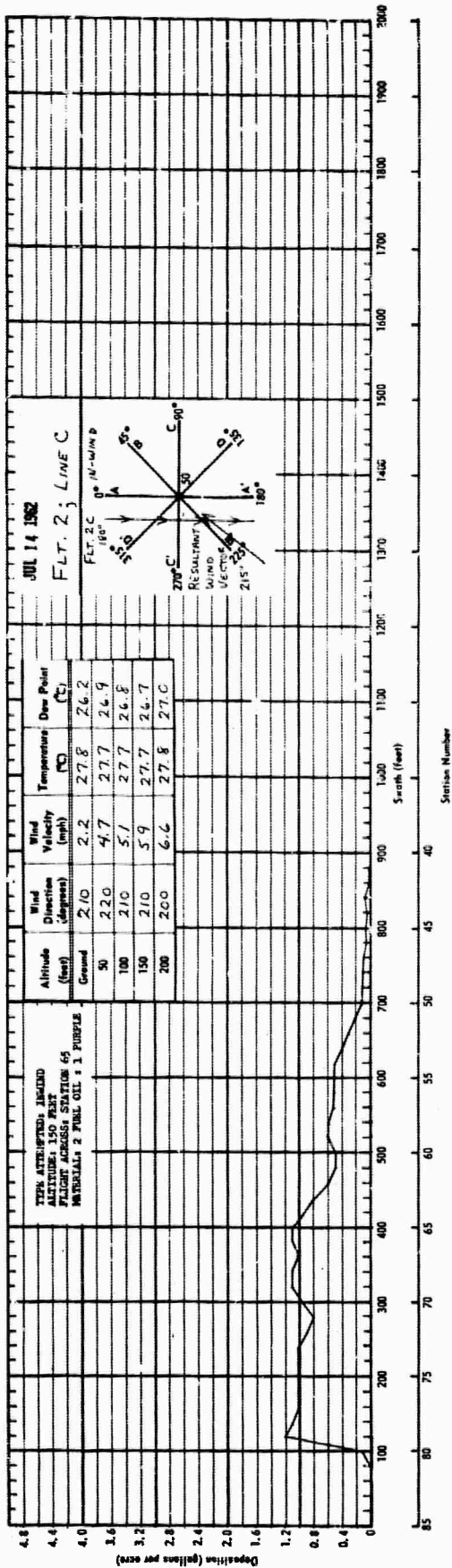




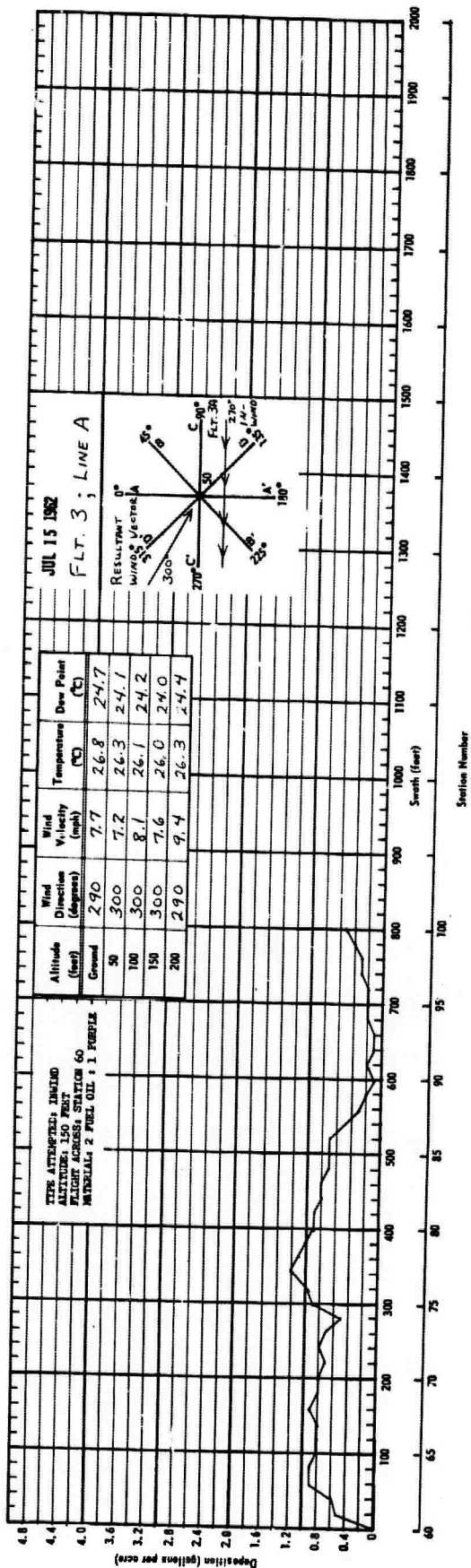
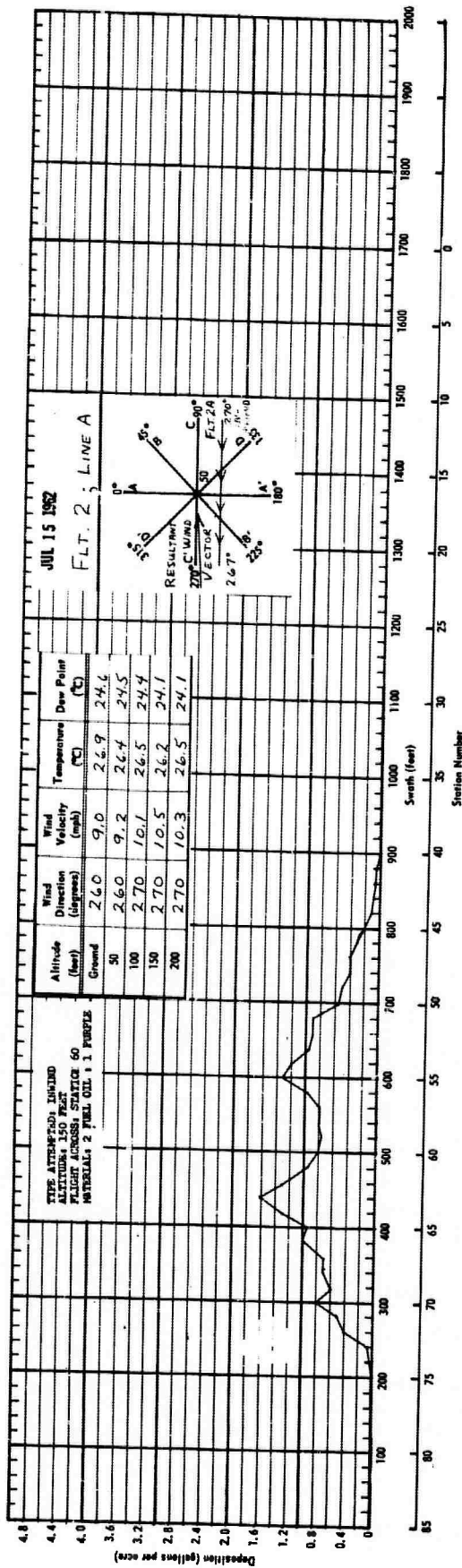


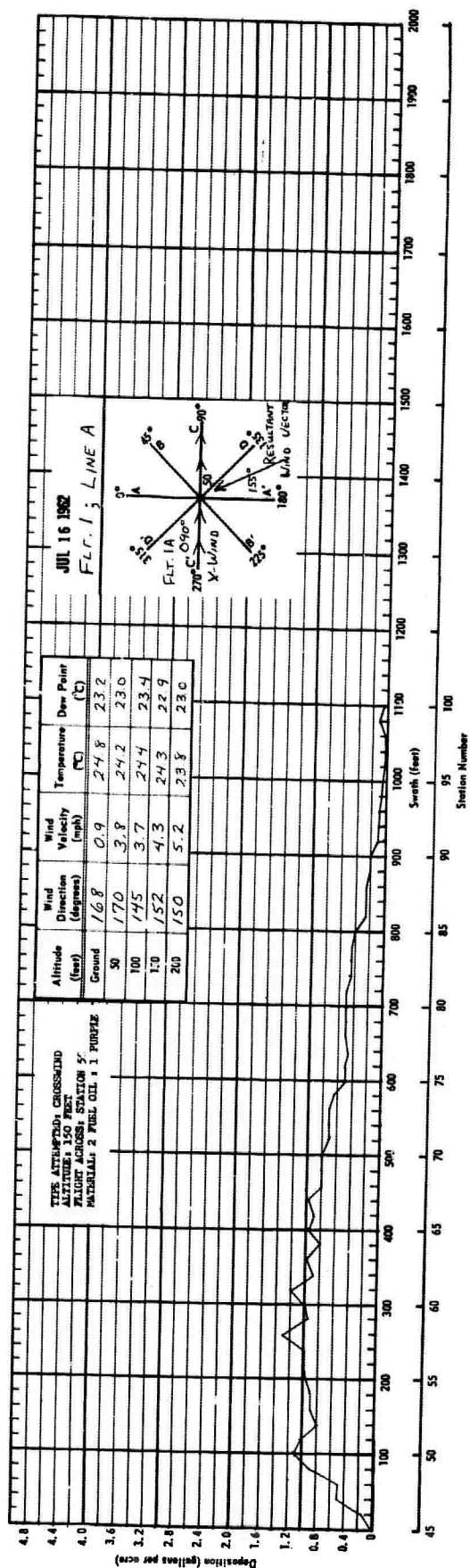
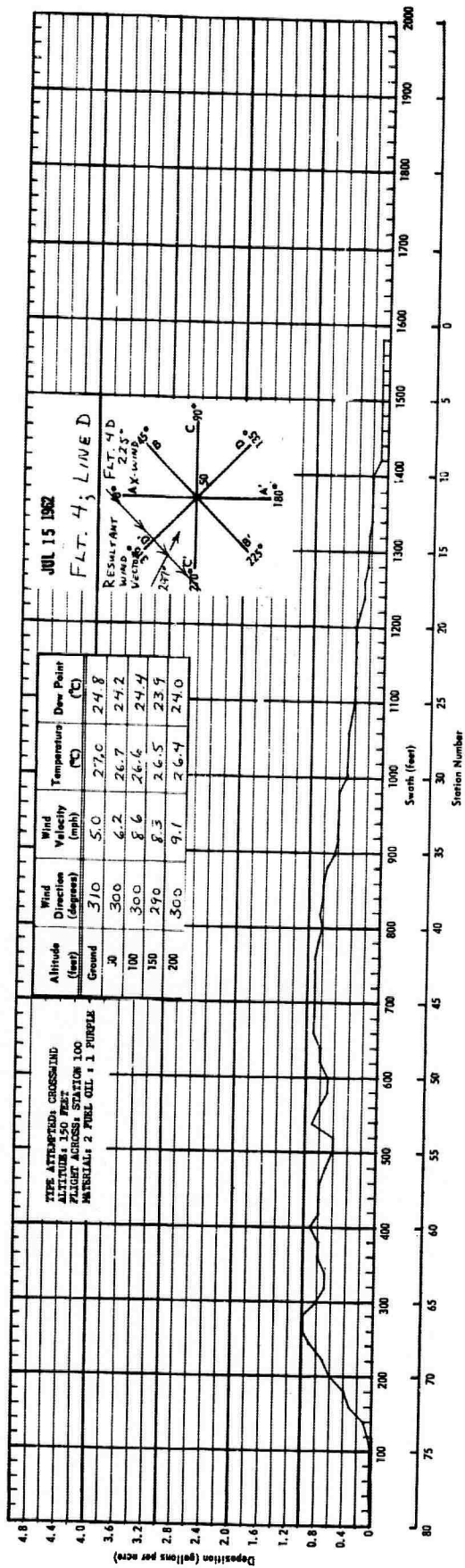


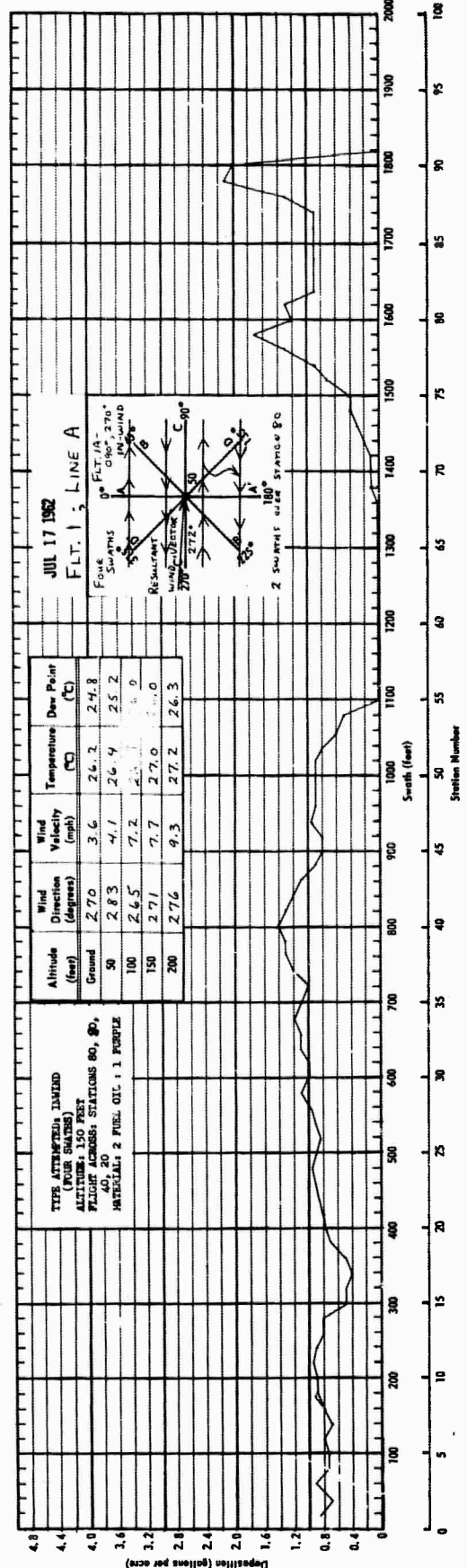
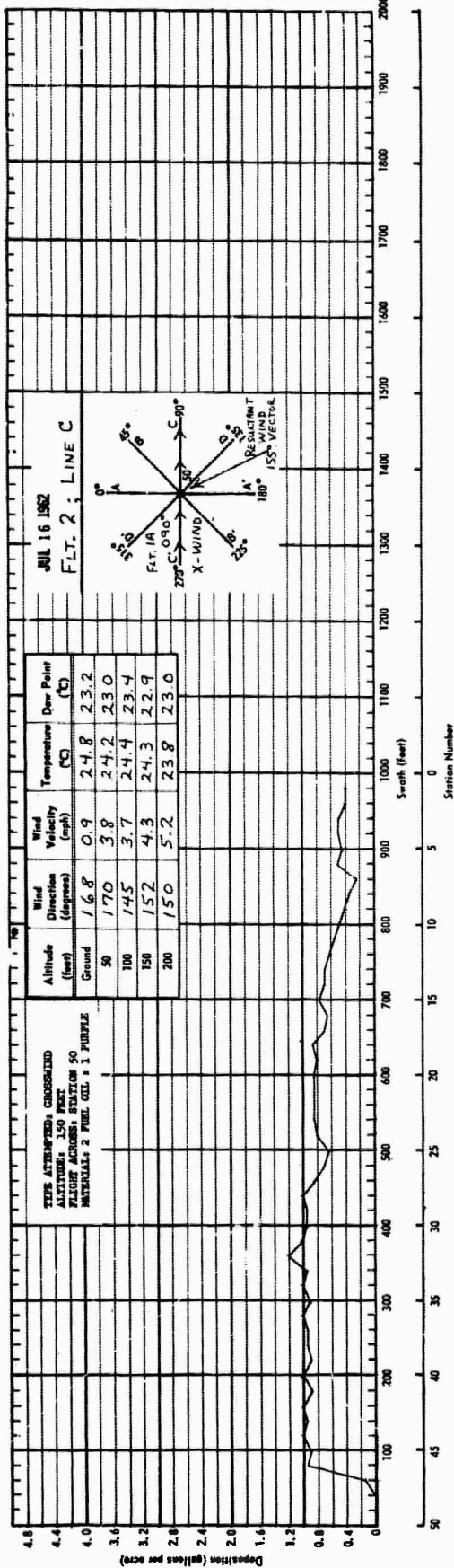




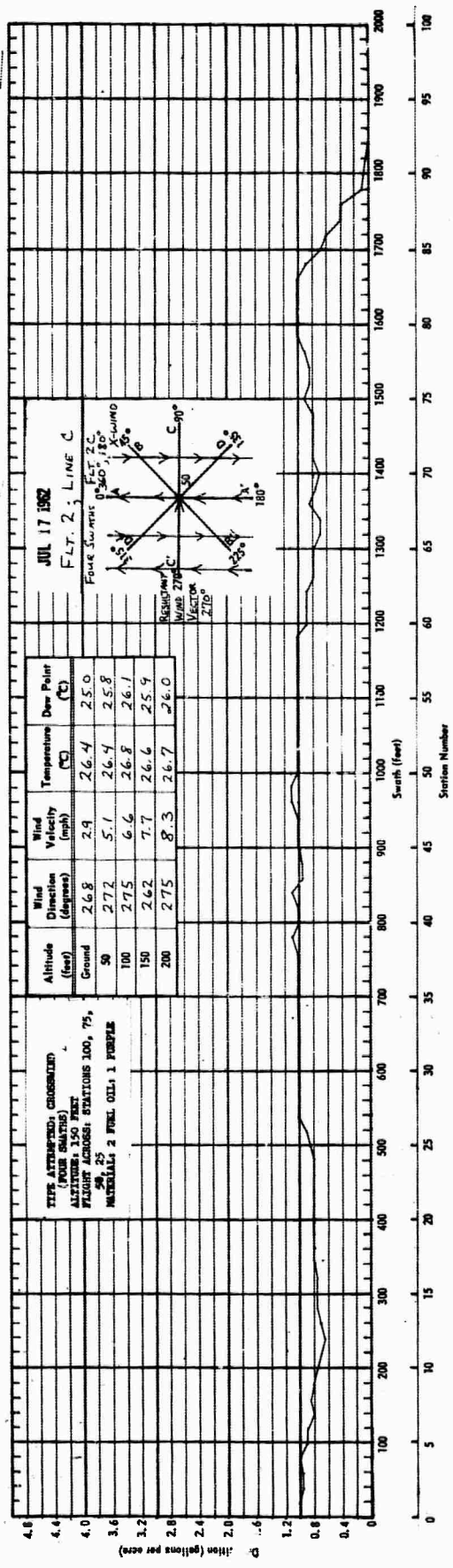












## DOCUMENT CONTROL DATA - R&amp;D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

1. ORIGINATING ACTIVITY (Corporate author) U.S. Air Force, U.S. Department of Agriculture, and U.S. Army (Cml Corps)		2a. REPORT SECURITY CLASSIFICATION Unclassified	
		2b. GROUP Not applicable	
3. REPORT TITLE Supplement to Modification and Calibration of Defoliation Equipment (C-123 - First Modification)			
4. DESCRIPTIVE NOTES (Type of report and inclusive dates)			
5. AUTHOR(S) (Last name, first name, initial) Brown, James W.			
6. REPORT DATE July 1962		7a. TOTAL NO. OF PAGES 71	7b. NO. OF REFS
8a. CONTRACT OR GRANT NO.		9a. ORIGINATOR'S REPORT NUMBER(S)	
b. PROJECT NO. OSD/ARPA Order 256-62, Amendment 4			
c.		9b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report)	
d.			
10. AVAILABILITY/LIMITATION NOTICES Each transmittal of this document outside the agencies of the U.S. government must have prior approval of the Director of Technical Information, Advanced Research Projects Agency, Office of the Secretary of Defense.			
11. SUPPLEMENTARY NOTES		12. SPONSORING MILITARY ACTIVITY Advanced Research Projects Agency, Office of the Secretary of Defense	
13. ABSTRACT This report contains supplemental data on work undertaken to modify and calibrate the MC-1 Defoliant Spray System for use with C-123 aircraft. It contains basic data and plots for 18 additional spray flights, as well as 59 plots of data obtained in the original studies.			

14. KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT

## INSTRUCTIONS

1. **ORIGINATING ACTIVITY:** Enter the name and address of the contractor, subcontractor, grantee, Department of Defense activity or other organization (*corporate author*) issuing the report.

2a. **REPORT SECURITY CLASSIFICATION:** Enter the overall security classification of the report. Indicate whether "Restricted Data" is included. Marking is to be in accordance with appropriate security regulations.

2b. **GROUP:** Automatic downgrading is specified in DoD Directive 5200.10 and Armed Forces Industrial Manual. Enter the group number. Also, when applicable, show that optional markings have been used for Group 3 and Group 4 as authorized.

3. **REPORT TITLE:** Enter the complete report title in all capital letters. Titles in all cases should be unclassified. If a meaningful title cannot be selected without classification, show title classification in all capitals in parenthesis immediately following the title.

4. **DESCRIPTIVE NOTES:** If appropriate, enter the type of report, e.g., interim, progress, summary, annual, or final. Give the inclusive dates when a specific reporting period is covered.

5. **AUTHOR(S):** Enter the name(s) of author(s) as shown on or in the report. Enter last name, first name, middle initial. If military, show rank and branch of service. The name of the principal author is an absolute minimum requirement.

6. **REPORT DATE:** Enter the date of the report as day, month, year; or month, year. If more than one date appears on the report, use date of publication.

7a. **TOTAL NUMBER OF PAGES:** The total page count should follow normal pagination procedures, i.e., enter the number of pages containing information.

7b. **NUMBER OF REFERENCES:** Enter the total number of references cited in the report.

8a. **CONTRACT OR GRANT NUMBER:** If appropriate, enter the applicable number of the contract or grant under which the report was written.

8b, 8c, & 8d. **PROJECT NUMBER:** Enter the appropriate military department identification, such as project number, subproject number, system numbers, task number, etc.

9a. **ORIGINATOR'S REPORT NUMBER(S):** Enter the official report number by which the document will be identified and controlled by the originating activity. This number must be unique to this report.

9b. **OTHER REPORT NUMBER(S):** If the report has been assigned any other report numbers (*either by the originator or by the sponsor*), also enter this number(s).

10. **AVAILABILITY/LIMITATION NOTICES:** Enter any limitations on further dissemination of the report, other than those imposed by security classification, using standard statements such as:

- (1) "Qualified requesters may obtain copies of this report from DDC."
- (2) "Foreign announcement and dissemination of this report by DDC is not authorized."
- (3) "U. S. Government agencies may obtain copies of this report directly from DDC. Other qualified DDC users shall request through \_\_\_\_\_."
- (4) "U. S. military agencies may obtain copies of this report directly from DDC. Other qualified users shall request through \_\_\_\_\_."
- (5) "All distribution of this report is controlled. Qualified DDC users shall request through \_\_\_\_\_."

If the report has been furnished to the Office of Technical Services, Department of Commerce, for sale to the public, indicate this fact and enter the price, if known.

11. **SUPPLEMENTARY NOTES:** Use for additional explanatory notes.

12. **SPONSORING MILITARY ACTIVITY:** Enter the name of the departmental project office or laboratory sponsoring (*paying for*) the research and development. Include address.

13. **ABSTRACT:** Enter an abstract giving a brief and factual summary of the document indicative of the report, even though it may also appear elsewhere in the body of the technical report. If additional space is required, a continuation sheet shall be attached.

It is highly desirable that the abstract of classified reports be unclassified. Each paragraph of the abstract shall end with an indication of the military security classification of the information in the paragraph, represented as (TS), (S), (C), or (U).

There is no limitation on the length of the abstract. However, the suggested length is from 150 to 225 words.

14. **KEY WORDS:** Key words are technically meaningful terms or short phrases that characterize a report and may be used as index entries for cataloging the report. Key words must be selected so that no security classification is required. Identifiers, such as equipment model designation, trade name, military project code name, geographic location, may be used as key words but will be followed by an indication of technical context. The assignment of links, rules, and weights is optional.